

विवरण पत्रिका
पशु-चिकित्सा विज्ञान के
वाचस्पति कार्यक्रमों में प्रवेश हेतु

INFORMATION BULLETIN
for Admission to Doctoral Programmes
in
Veterinary Sciences

2015



भा०कृ०अ०प०-भारतीय पशुचिकित्सा अनुसंधान संस्थान
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ICAR-INDIAN VETERINARY RESEARCH INSTITUTE

(Deemed University)

IZATNAGAR-243 122 (UP) INDIA

Website: www.ivri.nic.in

डा० राज कुमार सिंह
निदेशक एवं कुलपति
Dr. R.K. Singh
Director & Vice Chancellor

डा. विजेन्द्र पाल सिंह
संयुक्त निदेशक (शैक्षणिक) एवं अधिष्ठाता
Dr. V.P. Singh
Joint Director (Academic) cum Dean

उमेश चन्द्र प्रसाद
मुख्य प्रशासनिक अधिकारी एवं कुलसचिव
U.C. Prasad
Chief Adm. Officer & Registrar

डा. अशोक कुमार शर्मा
परीक्षा नियन्त्रक
Dr. A.K. Sharma
Controller of Examination

डा. जय किशन प्रसाद
शैक्षणिक समन्वयक
Dr. J.K. Prasad
Academic Coordinator

Tentative Dates

• Issue of application form (by post)	March 02- 25, 2015
• Issue of application form (at cash counter University Office, IVRI, Izatnagar)	March 02- 31, 2015
• Last date for receipt of application form	April 01, 2015 (upto 5.00 PM)
• Last date of receipt of application from candidates of Andaman & Nicobar Island, Lakshadweep, State/ Union Territory in the North Eastern Region, Ladakh Division of J&K State & Sikkim	April 08, 2015 (upto 5.00 PM)
• Date of Entrance Examination	May 17, 2015 (Sunday)
• Declaration of Result on IVRI Website:	Third week of June , 2015
• Date of Registration/Admission	August 1 & 3, 2015
• Date of Registration/Admission with late fee	August 4-7, 2015
• Date of Registration/Admission for Wait list Candidates	August 10-11, 2015 (I Waiting) August 12-14, 2015 (II Waiting)
• Last Date of Admission	August 14, 2015
• Commencement of first semester	August 01, 2015
• Orientation Programme	August 04, 2015

Note: 1. Application form and Information Bulletin can also be downloaded from the IVRI website www.ivri.nic.in

Important Telephone/Fax/EPABX Nos. Etc.

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1. INTRODUCTION

Indian Veterinary Research Institute (IVRI) was established on 9th December, 1889 as Imperial Bacteriological Laboratory at Pune (Maharashtra) and was later-on shifted to Mukteswar, Distt. Nainital (Uttarakhand) in 1893. Mukteswar was chosen because of its Eco-Geo-physical suitability for research on infectious diseases. Subsequently, for extending the activities of the Institute; Izatnagar, Bareilly (UP) campus was established in 1913 for large-scale production of serum and vaccines. It gradually expanded to the present size with its headquarters at Izatnagar (UP) and campuses at Mukteswar Distt. Nainital (Uttarakhand), Bengaluru (Karnataka), and regional stations at Palampur (HP), Kolkata (WB) and Pune (Maharashtra). Research conducted in the Institute in the areas of animal health, production and technology with multidisciplinary approach has paid rich dividends. The research contributions have facilitated development of new biologicals used for diagnosis, prevention, cure and control of many devastating diseases of livestock and poultry, increased production of milk, meat, eggs and other animal products. Up-gradation of livestock and poultry with increased production potential, overcoming the shortage of animal feeds by better utilization of existing feed resources and substitution of conventional feeds by cheaper agro-industrial byproducts are other significant contributions. Post-graduate teaching and training programmes started in 1900 at the Institute when training was imparted to field veterinarians, civil and army personnel on various aspects of animal healthcare. Later, Associateship of IVRI and National Diploma courses were added as part of post graduate teaching programme. However, with the establishment of Post-Graduate College of Animal Sciences in 1958, presently the Institute has been providing quality education at masters' and doctoral levels in 22 and 19 disciplines, respectively. The Institute has been conferred the status of Deemed to be University with effect from 16th November, 1983 under Section 3 of the University Grants Commission Act (1956). The first academic session as Deemed University started on 15th January, 1985. The administrative control of the Institute is vested with the Indian Council of Agricultural Research (ICAR). The Institute has been attracting a large number of foreign students, especially from developing countries. Scholars have been deputed to this Institute from different countries for various short-term and long-term training programmes, diplomas and degree courses. Besides the above courses, the institute has also been conducting various short-term National and International Training Programmes, Short Courses and Summer Institutes from time to time to make the professionals familiar with latest developments in Veterinary and Animal Sciences. The Institute has also been recognized as the Centre for Advanced Faculty Training in Animal Nutrition and Animal Physiology by ICAR, New Delhi. The Institute, spread over an area of 440.54 Acres, has a well established National Library of Veterinary Sciences, Animal and Fodder Farms, Boys' and Girls' Hostels, Bank and Post Office facilities at its Izatnagar campus. It is located at a distance of 258 km from New Delhi, and about 8 km from Bareilly Jn. and 1 km from Izatnagar Railway Station.

2. AUTHORITIES (DEEMED UNIVERSITY)

- (a) **The Director** is the Principal Executive Academic Officer of the Institute and exercises powers similar to the Vice-Chancellors of other Universities in University affairs.
- (b) **The Joint Director (Academic)-cum-Dean** is responsible for the organization and implementation of the teaching programmes and co-ordination of post-graduate studies and research in all the disciplines of the Deemed University.

- (c) **The Registrar** is responsible for maintenance of all records related to performance of the students, assistance in admissions and for establishment matters and general administration in the Deemed University.
- (d) **The Controller of Examination** is responsible for conducting various examinations and maintenance of all records of Examinations related matter in the Deemed University.
- (e) **The Academic Coordinator** is responsible for all academic matters.

3. ACADEMIC SESSION AND TERM CALENDAR

The academic year of the Institute is comprised of two semesters, each approximately of 20 weeks duration. The date for programme of studies of each semester in a particular academic year is decided by the Institute well in advance. The time schedule of the academic year 2015-16 is given below:

- I Semester : August to January
 II Semester : February to July

TERM CALENDAR (Subject to change) I Semester:

Sl. No.	Events	1 st Semester (August-January)
1.	Registration/Fee deposition/admission of P.G. Students	01.08.15 & 03.08.15
2.	Payment of Institute/Hostel fee (for fresh students)	01.08.15 & 03.08.15
3.	Orientation Programme of first year fresh students	04.08.15
4.	Last date of submission of roster forms (in person)	05.08.15
5.	Payment of Institute/Hostel fee (for existing students)	05.08.15 to 06.08.15
6.	Last date for Admission/Registration and payment of Institute/Hostel fee with late fee (for fresh students)	04.08.15 to 07.08.15
7.	Last date for payment of Registration and payment of Institute/Hostel fee with late fee (for existing students)	07.08.15
8.	Last date for adding/dropping the course	17.08.15
9.	Date of submission of details of courses registered by each student (by the HDs) in the prescribed proforma	21.08.2015
10.	Teachers' Day	05.09.15
11.	Preliminary examination (for Ph.D. II year)	14.09.15
12.	Quiz Examination	15.09.15 to 21.09.15
13.	Last date of submission of result of Quiz	28.09.15
14.	Mid-term examination	27.10.15 to 07.11.15
15.	Last Date of submission of result of Mid-term examination	13.11.15
16.	Last date of submission of result of Special problem, Seminar & assignment	29.11.15
17.	Submission of ORW (for MVSc II year)	30.11.15
18.	Final examinations for Audit Courses	01.12.15 to 07.12.15
19.	Last date of submission of result of all Internal Examinations	08.12.15
20.	Semester-end final examination	14.12.15 to 12.01.16
21.	Semester Break	13.01.16 to 31.01.16
22.	Declaration of Result of Semester end examination	31.01.16

TERM CALENDAR (Subject to change) II Semester:

Sl. No.	Events	2 nd Semester (February-July)
1.	Registration/admission/Fee deposition	01.02.16 to 05.02.16
2.	Last date of submission of roster forms (in person)	04.02.16
3.	Last date for payment of Registration and payment of Institute/ Hostel fee with late fee	06.02.16 to 08.02.16
4.	Last date for adding/dropping a course	16.02.16
5.	Last date of submission of details of courses registered by each student in the prescribed proforma (to be submitted by HD)	20.02.16
6.	Quiz Examination	16.03.16 to 21.03.16
7.	Last date of submission of result of Quiz	28.03.16
8.	Preliminary examination (for Ph.D. II year)	14.03.16
9.	Mid-term examination	27.04.16 to 07.05.16
10.	World Veterinary Day	27.04.16
11.	Last Date of submission of result of Mid-term examination	16 .05.16
12.	Last date of submission of result of Special problem, Seminar & assignment	30.05.16
13.	Final examinations for Audit Courses	25.05.16 to 30.05.16
14.	Last date of submission of result of all Internal Examinations	30.05.16
15.	Deadline for submission of Thesis by the MVSc II year students	30.06.16
16.	Semester-end final examination	04.06.16 to 30.06.16
17.	Semester Break	01.07.16 to 31.07.16
18.	Declaration of Result of Semester end examination	31.07.16

NOTE: In case of holiday falls on any above date, the schedule will be shifted to next working day.

4. ADMISSION

4.1 75% seats for doctoral programmes, including sponsored seats are to be filled on the basis of all India Entrance Examination conducted by the Institute and remaining 25% seats (subject to atleast one seat for each discipline) will be filled-up on the basis of All India Competitive Examinations for award of ICAR's Senior Research Fellowship [AICE-SRF {PGS}] conducted by Education Division, ICAR, New Delhi.

4.2 Important instructions to the candidates

- Admission to the Institute implies acceptance, without any modification, by the student and his/her parents/guardians of all provisions given in the bulletin or any change in the Institute rules, regulations, fee, etc. that are notified from time to time.
- If any document or information submitted by the candidate is found to be false at any stage during his/her stay in the Institute, his/her admission will be liable to be cancelled.
- Any candidate admitted in the University earlier and left the MVSc/ PhD programme in violation of rules of the University or found guilty of violating any rule of the University will not be eligible for admission in the University. In case any candidate discontinued the degree programme without completing their study their candidature for admission will be considered only subject to clearance of Institute's dues as per university norms.

- iv. The information indicated in the bulletin is only for general guidance and may be modified/ changed from time to time by the University. The information bulletin shall not be treated as a legal document.
- v. The results of the entrance examination declared by the Deemed University & displayed on IVRI Website shall be treated as final. There is no provision for scrutiny/ re-evaluation of answer books.
- vi. In case of any legal dispute, the same shall be subject to Bareilly Court's jurisdiction only.

4.3 Programmes

The main subjects/disciplines of study in which various degrees will be offered are as follows:

Disciplines	Code
1. Animal Biochemistry	BCT
2. Animal Biotechnology	BTY
3. Animal Genetics and Breeding	AGB
4. Animal Nutrition	ANT
5. Livestock Production and Management	LPM
6. Livestock Products Technology	LPT
7. Poultry Science	PSC
8. Veterinary Bacteriology	VBM
9. Veterinary Extension Education	EXT
10. Veterinary Gynaecology and Obstetrics	VGO
11. Veterinary Immunology	VIM
12. Veterinary Medicine	VMD
13. Veterinary Parasitology	VPA
14. Veterinary Pathology	VPL
15. Veterinary Pharmacology	VPT
16. Veterinary Physiology	VPY
17. Veterinary Public Health	VPH
18. Veterinary Surgery & Radiology	VSR
19. Veterinary Virology (at Mukteswar, Distt. Nainital (U.K.))	VVY

NOTE: A candidate can apply for admission only in any one of the above subject suiting his/her qualifications.

4.4 Eligibility for Admission

The candidates for admission to PhD programme must have MVSc degree in the concerned discipline as specified below with a minimum CGPA 6.50/10.00 scale, 3.25/5.00 scale, 2.60/4.00 scale for General and OBC categories and 5.50/10.00 scale, 2.75/5.00 scale, 2.20/4.00 scale for SC/ST/Physically challenged/ Sponsored candidates, respectively from any recognized University in India or where grade-points are not awarded and only marks are awarded, the candidate must have secured atleast 60% marks for General/OBC category. For SC/ST/Physically challenged/Sponsored category candidates, the minimum percentage of marks will be 50%. The equivalence between OGPA and percent marks, where needed, will not be acceptable, as specified below:

Sl. No.	Name of Discipline	Eligibility
1.	Animal Biochemistry	BVSc & AH with Master's degree in concerned discipline
2.	Animal Biotechnology	BVSc & AH with Master's degree in Biotechnology/ Animal Biotechnology/Animal Biochemistry/ Microbiology/ Immunology/ Virology
3.	Animal Genetics and Breeding	BVSc & AH with Master's degree in concerned discipline
4.	Animal Nutrition	-do-
5.	Livestock Production and Management	-do-
6.	Livestock Products Technology	-do-
7.	Poultry Science	-do-
8.	Veterinary Bacteriology	BVSc & AH with Master's degree in Vet. Bacteriology/Vet. Virology/ Vet. Microbiology/ Vet. Public Health/ Avian Diseases/ Vet. Immunology/Epidemiology/ Biotechnology
9.	Veterinary Extension Education	BVSc & AH with Master's degree in concerned discipline/ Vet. Medicine/ Vet. Gynaecology & Obstetrics/ Vet. Surgery/ Animal Nutrition
10.	Veterinary Gynaecology and Obstetrics	BVSc & AH with Master's degree in concerned discipline
11.	Veterinary Immunology	BVSc & AH with Master's degree in Vet. Immunology or MVSc in Vet. Microbiology/Virology/ Bacteriology/ Pathology/Biotechnology/Avian Diseases/Parasitology/ Animal Biochemistry with minor in Vet. Immunology
12.	Veterinary Medicine	BVSc & AH with Master's degree in concerned discipline
13.	Veterinary Parasitology	-do-
14.	Veterinary Pathology	BVSc & AH with Master's degree in concerned discipline/ Avian Diseases
15.	Veterinary Pharmacology	BVSc & AH with Master's degree in concerned discipline
16.	Veterinary Physiology	-do-
17.	Veterinary Public Health	-do-
18.	Veterinary Surgery & Radiology	-do-
19.	Veterinary Virology	BVSc & AH with Master's degree in Vet. Virology/Vet. Microbiology/Vet. Immunology with specialization in Virology/Avian Diseases

4.5 (a) Subject-wise number of seats (OPEN Category)

Sl. No.	Name of Discipline	GEN	SC	ST	OBC	Total
1.	Animal Biochemistry	3	-	-	2	5
2.	Animal Biotechnology	3	1	1	1	6
3.	Animal Genetics and Breeding	3	1	1	1	6
4.	Animal Nutrition	3	1	-	1	5
5.	Livestock Production and Management	1	1	-	-	2
6.	Livestock Products Technology	1	-	-	1	2
7.	Poultry Science	3	1	1	1	6
8.	Veterinary Bacteriology	2	1	-	1	4
9.	Veterinary Extension Education	2	1	-	1	4
10.	Veterinary Gynaecology & Obstetrics	3	1	-	-	4
11.	Veterinary Immunology	2	-	-	-	2
12.	Veterinary Medicine	2	-	-	2	4

13.	Veterinary Parasitology	1	1	-	2	4
14.	Veterinary Pathology	2	-	-	2	4
15.	Veterinary Pharmacology	1	1	-	1	3
16.	Veterinary Physiology	3	-	1	1	5
17.	Veterinary Public Health	2	-	-	2	4
18.	Veterinary Surgery & Radiology	2	1	-	1	4
19.	Veterinary Virology	2	-	1	1	4
	Total	41	11	05	21	78

Note: 3% (2 seats) will be reserved for physically challenged candidates as per their merit on horizontal basis.

4.5 (b) One Sponsored (In-service) candidate shall be admitted in each discipline over and above the normal seats. No reservation in sponsored category seats will be applicable. This is purely on the basis of rank/merit in the entrance examination.

4.6 Procedure for application:

- (a) Information Bulletin and Application form for admission into PhD programme can either be obtained from the Assistant Administrative Officer (Acad.), IVRI, Izatnagar-243122, Bareilly (UP) OR can be downloaded from Institute website (www.ivri.nic.in) and should be submitted alongwith a bank draft of Rs. 1200/- for General/OBC/PH category and Rs. 1000/- for SC/ST/PH category candidates drawn in favour of "ICAR, Unit IVRI, IZATNAGAR" payable at State Bank of India, CARI Branch (Code No. 7027), Bareilly.
- The application form bears a serial number at the top right corner on page No.1. This number, the degree programme and the subject in which the admission is sought must be quoted in all correspondences concerning admission at this Institute.
- All applications, duly completed in all respects with all documents required should be sent so as to reach the Assistant Administrative Officer (Academic), IVRI, Izatnagar-243122, Bareilly on or before **1st April, 2015 (5:00 PM)** (i.e. the closing date). The last date for candidates in the Andaman & Nicobar Island, Lakshadweep, States/Union Territory in the North Eastern Regional, Ladakh Division of J&K State and Sikkim is **8th April, 2015 (5:00 PM)**. Postal delay will not be accepted as a legitimate reason to entertain application received after the last date. The envelope containing the application form should be superscripted in capital letters, "**APPLICATION FOR ADMISSION TO Ph.D PROGRAMME**".
- In case, a candidate has appeared for the qualifying degree examination for admission and the result has not been announced in time for him/her to submit the application by the due date, he/she may still complete the application in all respects, except the academic record relating to last examination and submit it by the date specified above. **The candidate will be required to submit his/her qualifying degree certificate on his/her successful completion of the degree examination at the time of registration/admission. This is a mandatory requirement to all the candidates before admission.**
- A candidate can apply for either under OPEN OR SPONSORED Category, as the case may be. Once applied will be final.
- Employed candidates applying under open category, **must submit their "No Objection Certificate" alongwith relieving order from his/her employer at the time of admission, failing which their candidatures will be treated as cancelled.** This is a mandatory requirement to all such candidates.

7. The candidate is advised in his/her own interest to fill up the application form carefully and accurately and to ensure that all the certificates required to be attached are enclosed. All enclosures must be numbered. Candidates are also advised to retain atleast four copies of Photographs same as pasted on the Application Form for subsequent use during admission.
8. The candidates are advised to retain one copy of admit card with them, paste recent passport size self attested photograph and note down the roll number as displayed on IVRI website. The admit card will be mandatory to be produced in the Examination Hall.
9. **If a candidate furnishes wrong information or suppresses any relevant information, his/her candidature/ admission will liable to be cancelled.**
10. (i) Self attested photocopy of the following certificates/documents are mandatory required to be enclosed with the application form:
 - a. Matriculation (Class X) marksheet and certificate for date of birth.
 - b. Higher Secondary (10+2) or equivalent certificate and marksheet
 - c. Bachelor's degree certificate and Transcript.
 - d. Master's degree certificate and Transcript wherever
 - e. In the absence of d above, course completion certificate indicating percentage of marks or final CGPA obtained from the Registrar of the University/Principal/Dean of the college.
 - f. Scheduled Caste/Scheduled Tribe/OBC certificate as per annexure-III or IV from the authority empowered to issue such certificate of verification, wherever necessary. Until the certificates are verified from the competent authority, the admission under these reserved quotas will be treated as provisional.
 - g. Documentary evidence of employment from the employer(s) in case of in-service candidates.
- (ii) The following additional certificate/documents are required at the time of admission in original:
 - a. Character Certificate issued by the last Institution/University attended, in original.
 - b. Migration Certificate, issued by the last Institution/University attended, in original.
 - c. Certificate of physical fitness issued not than six months before the date of admission.
 - d. All original certificates and marks sheets as well as photocopy are to be produced at the time of admission. Candidates who don't produce all the original certificates and marks sheets will not be admitted.
11. All correspondence for admission should be addressed to the Assistant Administrative Officer (Acad), IVRI, Izatnagar-243 122, Bareilly (UP) India.

4.7 Submission of Application

The last date for receipt of application duly completed in all respect shall be **01.04.2015 till 5:00 PM.** No application shall be accepted after the due date and time. The last date for candidates in the Andaman & Nicobar Island, Lakshadweep, States/Union Territory in the North Eastern Regional, Ladakh Division of J&K State and Sikkim is **08.04.2015 (5:00 PM).**

4.8.1 Admission of Sponsored Candidates

In service candidates from ICAR Institutes, Central/State Agricultural/Veterinary Universities and other Central/State Government Organization/Departments will be

considered for PhD degree programmes only if they are sponsored by their employers on deputation terms/study leave subject to fulfillment of eligibility requirements already mentioned for open candidates as per 4.4.

The in-service (Sponsored candidates) may submit an advance copy of the application form alongwith the prescribed fee so as to reach on or before the closing date of receipt of application i.e. **1st April, 2015** (upto 5:00 PM) and the last date for candidates in the Andaman & Nicobar Island, Lakshadweep, States/Union Territory in the North Eastern Regional, Ladakh Division of J&K State and Sikkim is **8th April, 2015 (5:00 PM)**. Through proper channel copy of application form duly signed the sponsored certificate by the employer should reach on or before the date of admission.

Sponsored (In-service) candidates of ICAR, Central/State Agricultural/Veterinary Universities, Central/State Govt. Departments, etc. for promoting faculty up-gradation may depute their faculty/employees for admission to Doctoral Programme subject to the following conditions:

- (i) The candidate must be sponsored by his/her employer. The eligible candidates will have to appear and qualify in the written examination for PhD admission as per university notification and Information Bulletin. Separate merit list will be prepared for the eligible sponsored candidates in each discipline. The result of eligible candidates will be displayed on IVRI website.
- (ii) One Sponsored (In-service) candidate shall be admitted in the PhD degree programme in each discipline over and above the normal seats.

4.8.2 Foreign Students

- i) Foreign students seeking admission shall forward their applications through their respective Embassies or through their respective Indian Missions abroad to the Government of India/Deputy Director General (Education), ICAR, Krishi Bhawan, New Delhi for consideration of their eligibility for admission, etc. The foreign nominees are also required to possess the required qualifications. However, no percentage of marks is fixed for them.
- ii) Foreign students having DVM Degree will have to undergo for at least one year (two semesters) deficiency courses of 30-35 credit hours, if they want to take admission to the PhD degree programme at this Institute.
- iii) Foreign students sponsored for study at this Institute should arrive at Bareilly, preferably one week before the opening of the academic session to acquaint themselves with the activities of the Institute and to attend the orientation programme. They should contact the Assistant Administrative Officer (Acad.) at the University Office upon arrival for obtaining guidance concerning registration procedure, campus information and all other matters.
- iv) Foreign students seeking admission to this Institute are required to give an undertaking for undergoing medical examination including HIV test after arrival in India and their admission will be finalized only after the medical tests have been completed and they are declared fit.

4.9 Reservation

Fifteen (15%) percent seats for scheduled caste, 7.5% seats for scheduled tribe, 27% seats for Other Backward category (OBC) and 3% for Physically Challenged (PH) candidate.

4.9.1 In case seat under SC/ST category seat is vacant due to non-availability of eligible SC/ST candidate, the seat will be interchangeable in a particular discipline amongst the eligible SC/ST candidates. Even after that if the seat is vacant in SC/ST category, it will not be filled from any other category candidates.

4.9.2 In case any OBC reserved seat remains vacant due to non-availability of eligible OBC candidates, the said OBC seats shall be filled up amongst the general category candidates of the same subject/discipline as per merit.

4.9.3 3% (2 seats) will be reserved for physically challenged candidates as per their merit on horizontal basis.

4.9.4 The reservation is applicable only in case of candidates admitted under open category and not under sponsored category.

The details of allocation of seats reserved for various categories have been shown in the Information Bulletin at Para 4.5 (a) allocation of seats.

4.10 Age limit

Minimum age limit for PhD candidates shall be 23 years. There will be no upper age limit. The age shall be reckoned as on 1st August of the academic session.

5. SELECTION CRITERIA AND WRITTEN ENTRANCE EXAMINATION

5.1 Written examination

- i) The candidates who fulfill the prescribed minimum qualifications are only eligible to appear in the competitive written examination.
 - ii) Submission of application form for admission is not itself a guarantee for appearing in the written examination for admission at this Institute.
- (a) The minimum qualifying marks in the competitive entrance examination for consideration of admission to PhD programme shall be as under:

Examination	Minimum qualifying marks in Competitive entrance test		
	General Candidates	OBC Candidates	SC/ST Candidates
Subject matter of 200 Marks	50% (100 marks out of 200)	48% (96 marks out of 200)	45% (90 marks out of 200)

Note: The minimum qualifying marks for PH candidates will be same as for the category he belongs to i.e. SC, ST, OBC and General.

(b) The merit list of the examination will be declared on the basis of marks obtained in the written examination. In case of tie, admission will be given to the candidate on the basis of marks obtained in their MVSc degree and then BVSc degree. In case of tie even in the above, the candidate older in age will be admitted.

5.2 Subjects for Written Examination

The candidates may appear in the written examination in any one of the subject as given under clause 4.4. The subject and its code for entrance examination should be clearly indicated in the application form. The Question paper will contain multiple choice questions. Syllabus, for the examination has been given in the Information Bulletin. The medium of examination will be English only.

5.3 Venue, date, time and centre of examination

- i) The written entrance examination for Ph.D. degree programme shall be held on the **17.05.2015 (Sunday)** at the following centres from 11.00 AM to 1.00 PM. In case sufficient number of candidates do not opt for a particular centre, it will be merged with another centres: -
 - (a) IVRI, Izatnagar, Bareilly (UP)
 - (b) IVRI Campus, Bengaluru (Karnataka)
 - (c) IVRI Regional Centre, Palampur (H.P.)
 - (d) IVRI Regional Centre, Kolkata (W.B.)
 - (e) National Institute of High Security Animal Disease, Bhopal (M.P.)
- ii) No TA/DA for appearing in the written examination will be paid by the Institute, however, only eligible un-employed Schedule Caste/Scheduled Tribe candidates who appeared in the written examination will be paid traveling allowance on the basis of confirmed ticket limited to 2nd Sleeper Class railway fare by the shortest route both ways on production of caste certificate and evidence of journey performed. Payment of TA will be made through Bank Draft which will be sent by post only.
- iii) The candidates will have to make their own arrangements for boarding and lodging during the period of stay for entrance examination.

5.4 Duration and Type of Entrance Examination

The entrance examination in the subjects as per given choice will be of **2 hours** duration and will contain multiple choice questions. The candidate will be given separate answer sheet to mark one correct answer out of four choice given. The candidate will have to return the Question booklet and Answer Sheet after the end of examination to the Invigilators.

5.5 Announcement of Result

The final selection for admission to PhD degree programme for both fresh and sponsored candidates will be based on merit list prepared separately on the basis of marks obtained in the Entrance Examination and will be displayed in the third week of June, 2015 on the Institute's Website (www.ivri.nic.in).

6. RIGHT TO REFUSE ADMISSION

The Director cum Vice-Chancellor, IVRI reserves the right to refuse admission to any candidate without assigning any reason thereof. The decision of the Director shall be final and legally binding.

7. ORIENTATION PROGRAMME

In order to make all fresh students and sponsored students fully conversant with the requirement and working of the course credit system of instruction followed at this Institute, an Orientation Programme will be held on 4th August, 2015.

8. REGISTRATION OF STUDENTS

8.1 All the Selected students shall submit a surety bond, duly signed by the Notary at the time of Admission/Registration as per format enclosed in Annexure-II, failing which his/her admission/registration will not be accepted.

Every student enrolled shall be required to register at the beginning of each semester, as per calendar, till the completion of his/her degree requirements, including final viva-voce. Re-admission of such case shall be on application supported with valid justification and not as a matter of right. Registration shall consist of the following steps:

- (a) Filling up the roster forms for course(s) to be offered in that semester.
- (b) Submission of progress report for the preceding semester.
- (c) Payment of the fee and other dues.
- (d) Depositing the prescribed registration forms duly filled in by the student in person and signed by the Head of Division/Co-coordinator of PG programme/ Advisor.

The Registration for the first semester of the year for fresh students is a part of the admission procedure and shall be governed by the admission rules. Registration in respect of continuing students in each semester shall, however, be completed on the first day of each semester and the classes shall commence thereafter. No student can be permitted to register in subsequent semester unless he/she completes all the examinations of the course registered in the previous semester.

The Registration of continuing students shall not be permitted later than the last date of registration with late fee approved by the Joint Director (Acad.). If during the registration days, a student is required to be outside the Institute campus on the basis of prior permission, in connection with his/her studies, field work, research work or due to other unavoidable and legitimate circumstances, he/she may be permitted by the Joint Director (Acad.) to register himself/herself by submitting the necessary registration forms and fee through post. A continuing student who does not register on the notified date shall be required to pay a late fee of Rs. 500/- or as may be prescribed by the Institute.

In case, the name of a student is dropped out/struck off for a semester, re-registration of the student may be done only after the approval of Joint Director (Academic). The student will be required to submit the re-registration fee of Rs. 50/- in addition to late fee in the next semester.

8.2 RAGGING

Ragging is totally prohibited in the campus and all the students shall observe and abide by the rules & UGC regulations on curbing the menace of ragging in higher educational institutions 2009 under Section 26(1)(G) of the University Grant Commission Act 1956 dated 17.06.2009 published in the Gazette of India part-III, Section 4. Any student found guilty of ragging and/or abetting ragging, whether actively or passively or bearing a part of a conspiracy to promote ragging is liable to be punished in accordance with the aforesaid regulations.

If any incident of ragging comes to the notice of authorities of the Deemed University, IVRI, the concerned students shall be given liberty to explain and if his/her explanation is not found satisfactory, the authority would expel him/her from the Institute.

All the students have to submit an affidavit on plain paper as per Annexure-VI and VII of the Information Bulletin.

9. CANCELLATION OF REGISTRATION

The Director may cancel the registration of any student or group/batch/class of students who indulge(s) in acts of indiscipline, misconduct, violation of rules and regulations of the University, strikes, absence from classes without permission or without any valid reason or in whose case, the Director has reasons to believe that his/her continuance in the University would not be in the best interest of University.

The students, who have been permanently dropped from this University either on account of poor academic performance or on account of acts of indiscipline or misconduct shall not be eligible to make an application for re-admission to this Institute.

It is the responsibility of the candidates to furnish full and correct information on the application form. Any admission made on the basis of wrong information supplied by the candidates or through a clerical mistake in the Registrar's Office and detected subsequent to the admission and joining of the candidate, would be cancelled at the cost and risk of the student.

10. SYSTEM OF EDUCATION

- A. Semester System of Education is followed with both Internal and External examinations.
- B. The 10.00 points scale for grading is followed for completing degree required in Post Graduate Degree programme. Students must get CGPA of 7.00/10.00 for both Master's & Doctoral programmes.
- C. The students may also be sent for thesis research work to other Campuses/ Centres of IVRI and also other ICAR Institutes apart from IVRI, Izatnagar.

The details regarding examination evaluation, attendance & leave, Advisory Committees, Allotment of Advisors, Preliminary Examinations, Seminars, Thesis evaluation & Viva Voce examination, and all other matters relating to the degree programmes are given in the Academic Regulations of the Deemed University.

11. HOSTEL ACCOMMODATION

There is one International Trainees Hostel, four Boys Hostels and one Girls hostel with wi fi facilities The limited hostel accommodation will be allotted to students selected for PhD programmes on merit basis.

12. FEE AND OTHER CHARGES

12.1 The following fee and charges (likely to be revised) shall be payable by a full time student (MVSc/PhD) admitted to the Institute.

Fee may be paid by bank draft drawn in favour of "ICAR, Unit IVRI, Izatnagar" payable on any scheduled Bank at Bareilly with the Cashier of the University Office.

1.	Caution money (Refundable at the time of leaving, payable once on admission)	Rs. 5,000.00 for MVSc Rs. 10,000.00 for PhD
2.	Registration fee (per annum)	Rs. 100.00
3.	Tuition fees (Annual) (to be paid in two installments)	Rs. 4000.00
4.	A. Hostel, Water and Electricity Charges payable along with the tuition fee for each semester (to be paid by student getting hostel accommodation)	Rs. 1500.00 (Annual)
	B. (i) Married accommodation/Family Hostel	Rs. 1000.00 per month
	(ii) Water and Electricity Charges payable	Actual
	(iii) Security deposit (refundable)	Rs. 1500.00
	C. International Hostel fee: (i) Hostel fee (per month)	Rs. 1000.00/month
	(ii) Water and Electricity Charges (per month)	Actual
5.	Games fee payable along with the tuition fee for first semester (per academic year)	Rs. 100.00

6.	Identity Card fee (payable once on admission)	Rs. 150.00
7.	IVRI Student's Council fee payable along with the tuition fee for first semester (per academic year)	Rs. 150.00
8.	IVRI Student's Welfare Fund payable along with tuition fee for first semester per academic year	Rs. 100.00
9.	Examination fee to be paid in 1 st Semester of each academic year	Rs. 300.00 per annum (MVSc/PhD)
10.	Preliminary Comprehensive Examination fee payable once at the time of registration for the 2 nd semester of first year (PhD)	Rs. 300.00 (PhD)
11.	Thesis evaluation fee to be paid in IV (Master's) and VI (Doctoral) semester	Rs. 600.00 (for PhD) Rs. 500.00 (for MVSc)
12.	Magazine fee	Rs. 100.00 per annum
13.	Cultural & Literary activities fee	Rs. 100.00 per annum
14.	Library fee	Rs. 100.00/semester
15.	Medical Insurance premium will be charged as per rates applicable. It would, however, be optional till it is changed.	Optional (Till it is changed)

Fee, hostel, water, electricity charges shall be payable before the student is permitted to register at the beginning of each semester. Failure to pay the fees and other prescribed charges shall automatically result in the cancellation of registration of the student. The IVRI reserves the right to recover the dues from the student. Where a student fails in the Preliminary Comprehensive Examination or in the final *viva-voce* examination or is required to resubmit the thesis, he/she will be required to pay the prescribed examination fee again for each of such re-examinations.

- NOTE:** i. Fee and other charges can be changed without any prior notice.
ii. Fees etc. once paid are not refundable.
iii. The students belonging to Scheduled Castes/Scheduled Tribes, admitted at this Institute in various disciplines will be exempted from payment of the following fees: (a) Tuition fee (b) University Journal fee (c) Students Union fee (d) University Magazine fee (e) Students Welfare Fund (f) Sports Fund (g) Examination fee.

12.2 Other Charges

The following charges shall be liable for issuing various certificates:

- | | | |
|----|---|------------|
| 1. | Provisional Degree Certificate | Rs. 100.00 |
| 2. | Transcript/Duplicate Transcript | Rs. 100.00 |
| 3. | Convocation fee | Rs. 100.00 |
| 4. | Award of Degree <i>in absentia</i> | Rs. 600.00 |
| 5. | Make-up examination fee | Rs. 500.00 |
| 6. | Duplicate of Degree Certificate, if lost | Rs. 500.00 |
| 7. | Any other Certificate like Migration/Thesis submission Certificate/Course Completion Certificate(s), etc. | Rs. 50.00 |
| 8. | A late registration fee to be imposed on first day after due date. | Rs. 500.00 |

NOTE: Bonafide/character certificate will be issued free of charge.

Fee of foreign students will be charged according to the instructions of the Government of India and agreement reached with the foreign countries/international agencies.

13. FELLOWSHIP/SCHOLARSHIP

Institute Scholarship will be offered to assist the students who need financial assistance. This provision will be utilized to assist as many students as possible who have good academic record and who are making diligent efforts to pursue higher education. No student/ scholarship holder shall apply for or accept any other scholarship/ award/ employment without prior approval of the Joint Director (Acad.). The details of the various scholarships available are indicated below:

13.1 Institute Scholarship

The Indian Veterinary Research Institute will award scholarship to PhD students on the following terms and conditions:

IVRI Scholarship is admissible to only those candidates who are admitted through competitive entrance examination for PhD degree programmes. The award to the fresh students shall be made by the Joint Director (Acad.) of the Institute on the recommendation of the 'Standing Committee on Scholarship, Financial Assistance and Academic Progress' which shall take into consideration the merit of each applicant based initially on his/her admission and subsequently on his/her performance at the Institute.

13.1.1 Duration of scholarship

The duration of scholarship for PhD course will be of three years.

Initially the scholarship will be sanctioned for one year. It is essential to maintain an CGPA of 7.00 out of 10.00 at the end of each semester for Doctoral Degree students for getting the Scholarship. No Scholarship will be paid for the period, if it is discontinued on account of an CGPA lower than 7.00 out of 10.00. However, after obtaining the required CGPA, the scholarship will be resumed to the students. If a student gets "F" grade in any course other than in English or audit course, he/she will not get fellowship/scholarship until he/she clears the said course(s). However, no arrears of fellowship/scholarship will be paid for the intervening period.

The scholarship shall be paid for the period of stay of the recipient in the Institute (inclusive of the summer vacation/the semester breaks/and such other leaves, as may be sanctioned under the rules) up to the date of final viva-voce (*i.e.* till they are on the rolls) subject to the condition that the maximum period of scholarship prescribed in the Academic Regulation shall in no case be extended and the student marks his/her attendance in the Division/Section concerned.

13.1.2 Amount of scholarship

The amount of the scholarship for Doctoral programme, it is Rs. 13,125/- per month for three years with a contingent grant of Rs. 10,000/- per annum for three years.

13.1.3 Conditions of Award

The scholarship will be admissible to persons of Indian Nationality, as defined in the Constitution of India or persons domiciled in India, irrespective of sex, race or religion.

The scholar will be under the administrative control of the Joint Director (Acad.). He/she will work under a recognized Guide of the Faculty of the concerned discipline.

Each student will have to execute a surety bond for Rs. 50,000/- for PhD students, respectively on a non-judicial stamp paper of Rs. 100/- in the prescribed form attached as Annexure-II duly attested/notarized by the **Notary Public to be submitted on the day of admission/registration positively, failing which his/her admission will not be accepted.**

The following person can stand surety for the students:

- a) Parent/Guardian of the student;
- b) Guide/Teachers of the student
- c) Sarpanch of the village panchayat to which the student belongs
- d) MLA
- e) Local guardian of the student, if any
- f) Any other Central Government or State Government or Central Autonomous Bodies or Equivalent status or comparable higher status employees.

The scholarship will take effect from the date the scholar joins the course or from the date of start of academic year, whichever is later.

A scholar will devote his/her whole time to the approved study and will not be allowed to accept or hold another appointment paid or otherwise.

The Institute will not provide to the scholar benefits of Provident Fund. Scholarship will not be given to anyone who is drawing his/her pay on study leave or shall not be adjusted with his/her pay for any other benefits.

A scholar shall not leave the course before its completion without prior approval of the Joint Director (Acad.). He/She will be required to give an undertaking in the prescribed format before the scholarship is awarded.

13.1.4 Surety Bond

All students shall submit a surety bond, duly signed by the Notary at the time of Registration/Admission as per Annexure-II as the case may be, **failing which his/her registration/admission will not be accepted.** Proforma of surety bond is at Annexure II of the Information Bulletin.

13.1.5 Termination of Scholarship

The Scholarship will be terminated:

- i) On the date the student ceases to be on the rolls of IVRI.
- ii) On the date the student completes his/her study which may include submission of thesis and viva-voce examination.
- iii) On the date the sanction of scholarship expires.
- iv) If at any time, in the opinion of the Joint Director (Academic), a Student is found to be negligent in his/her work or is guilty of unbecoming conduct, the scholarship will terminate without notice.
- v) If a student completes his/her study before the expiry of sanctioned term of his/her scholarship, the Major Advisor should immediately inform the Joint Director (Academic) for necessary action.

14. MEDALS AND AWARDS

The University has instituted the following Medals/Awards for encouraging the P.G. students:

14.1 Best Student Awards

One Gold, one Silver and one Bronze Medals along with a certificate each to the best Master's and Doctoral students will be awarded for securing highest CGPA in their respective programmes. However, if a student has repeated a course or has been given any disciplinary punishment during the course programme, he/she will not be considered for the said award/medal.

14.2 Dr. C.M. Singh Award

The Award will be given to the best PhD scholar in any subject of Veterinary & Animal Science during the particular calendar year.

14.3 Dr. D.R. Uppal Award

The Award will be given for best PhD Thesis in the discipline of Veterinary Microbiology (Veterinary Bacteriology/Veterinary Virology/Veterinary Immunology) during the particular academic session.

14.4 Dr. N.D. Kehar Award

The Award will be given to best Ph.D. Scholar for excellence in thesis research work on the pattern of Jawaharlal Nehru Award of ICAR in the discipline of Animal Nutrition during the particular academic session

14.5 Dr. S.K. Talpatra Award

The Award will be given to the PhD scholar having highest OGPA in the discipline of Animal Nutrition during the particular academic session.

14.6 Dr. S.S. Prabhu Award

The Award will be given for best PhD Thesis in the discipline of Animal Genetics & Breeding during the particular academic session.

15. STUDENTS' WELFARE

15.1 Sports and Recreation

The institute encourages extra-curricular activities outside the class-room that enrich cultural, physical and social life of students. Spacious play grounds are provided in the students' hostels and necessary facilities exist for outdoor games like cricket, hockey, volley ball, badminton and various other athletic events. There are facilities also for indoor games in each hostel. There is a Student Sports Fund to which every student subscribes a sum of Rs. 200/- at the beginning of each academic year. The amount so collected is used in improving the sports facilities for the students and promoting literary activities among them.

15.2 Medical Facilities

Qualified medical officers look after the health of the students. The Institute dispensary is located within the campus. The medical officers reside at the Institute campus and are available round the clock. Medical services are provided to students at the Institute's dispensary.

15.3 Medical Insurance Scheme

Besides the above, Mediclaim Insurance facility is available to post-graduate students of this Institute on optional basis. The policy under this scheme covers reimbursement of hospitalization expenses only for illness/diseases contracted or injury sustained by the insured person. This scheme is not applicable for in-service students.

15.4 Students Welfare Fund

With a view to render financial aid to students in distress and to support any other student's activities a Student Welfare Fund has been instituted. All students are required to contribute Rs. 250/- for the Fund at the beginning of each academic year.

15.5 Students' Council

All students admitted to this Institute will automatically become members of IVRI Students' Council and are entitled to participate in the Council Election. However, in the case of students sponsored by various organizations, the sponsoring organizations should indicate in the application form itself whether they would have/would not have any objection to their nominees holding an office in the IVRI Students' Council.

16. COMPUTER CENTRE

The Institute has a well developed Computer Centre with adequate facilities for students for statistical analysis of data, etc. generated out of thesis research work. A Course on Data Processing and Computer Application is offered to the P.G. students by the Centre. Internet, intranet and e-mail facilities are also available.

17. LIBRARY FACILITIES

The National Library of Veterinary Sciences at IVRI has a collection of more than 2,50,000 highly specialized reading material in the form of books, journals, monographs, theses, reference works published data, bulletins, reviews, advances, reports, reprints, micro-documents etc. The library is subscribing about 125 foreign journals and about 103 Indian journals each year. Facilities for information, access and retrieval from CD-ROM databases in the multi-user environment is provided using CD-Mirror Hybrid Server on nominal charges. Library has been using KOHA V.3.8 software for automation of library activities. All the PhD theses available in the library have been digitized in PDF form and are available for use in library premises. Library provides E-mail & Internet facilities to its users at 24 terminals during all working hours and days. Three reading sections of the library are air-conditioned. Digital Video Recording based Close Circuit TV system with 22 cameras is being used in the various sections of the library for electronic surveillance. Photocopy facility is also made available in the library at nominal charges.

Rules for Library Facilities for PG students:

1. Five books are issued for 30 days and one journal for overnight to each student. If the issued publications are not returned within prescribed period a fine charged as per existing library rules.
2. One soft copy (CD) of the books, if available, is issued to the student for overnight.
3. If the books is torn out and misused while in custody of student/user, he/she shall be required to pay the penalty as decided by the competent authority.
4. If one volume of multi-volume set is damaged or lost while in the custody of the borrower, he/she will be liable to replace whole volume or pay the cost of whole volume alongwith a penalty as may be imposed by competent authority.
5. In case of loss of book, the borrower will be required either to replace the book with the latest available edition or pay the cost of book alongwith a penalty equal to the cost of book.
6. Library provides the reference research facility through CD-ROM in computers and the printouts on the payment basis @ Re 1.00 per page. Photocopy facility is provided on nominal payment @ Re 0.50 per exposure. These rates are subject to change from time to time.

18. COMMUNICATION CENTRE

The Communication Centre provides the necessary support to the scientific community of this Institute as a central facility for photography, art, reprography, printing, publication, information and media coverage.

19. PLACEMENT CELL

The Institute is annually producing, a sizeable number of well-trained competitive professionals with attractive employment opportunities in various sectors such as State and Central Govt., NGOs, Armed Services, Agricultural/Veterinary Universities, R&D jobs in Industry and Central Institutes, including Business and Media Management. The Placement Cell encourage linkages between leading organizations of livestock sector, other prospective employers and out-going post-graduate students to provide assistance in placement of this highly trained human resource.

20. POST GRADUATE EDUCATION & TRAINING PROGRAMMES

20.1. Disciplines & Major Fields of Specialization

The main disciplines/subjects of study and the major areas of specialization within each subject in which instruction is offered leading to MVSc and PhD degrees, are as under:

1. **Animal Biochemistry:** Clinical biochemistry, molecular markers for disease diagnosis, host defense system and cellular biochemistry.
2. **Animal Biotechnology:** Recombinant DNA(r-DNA) techniques including development of improved diagnostics and vaccine, Molecular characterization of bacteria and viruses, protein engineering and peptide synthesis, Bio-informatics and its application.
3. **Animal Genetics & Breeding** Livestock breeding plans; structural and functional genomics; DNA polymorphism in growth, productive and reproductive traits; cytogenetics, immunogenetics and molecular marker studies; genetic analysis for immune responses and disease resistance.
4. **Animal Nutrition:** Clinical and pet nutrition, detoxification of agro-forestry based unconventional feeds, improvement of lignocellulosic residues, rumen manipulation for enhanced health and production, energy metabolism, mineral metabolism, protein metabolism.
5. **Bio-Statistics:** Sampling techniques, design of experiments, statistical inference, livestock health statistics, econometrics, environmental statistics.
6. **Epidemiology:** Molecular epidemiology, sero-epidemiology, epidemiological survey, monitoring and surveillance of diseases.
7. **Livestock Economics & Statistics:** Livestock farm management and production economics. Livestock marketing and price analysis, livestock finance and project analysis, livestock development and policy, bio-energy and environmental economics.
8. **Livestock Production & Management:** Livestock behaviour and welfare in relation to production and reproduction. Housing to vis-à-vis performance, managerial norms of different livestock species. Reproductive health management and development of different animal handling devices.
9. **Livestock Products Technology:** Fresh and processed meat technologies, poultry products technology, milk and milk products processing, packaging and sensory evaluation, slaughterhouse byproducts technology & food microbiology and quality control.

10. **Poultry Science:** Avian genetics and breeding, avian nutrition and feed technology, avian physiology and reproduction, poultry products technology, poultry housing and management and transfer of technology.
11. **Veterinary Bacteriology:** Molecular bacteriology, development of diagnostics and vaccines; disease prevalence; bacterial disease pathogenesis, bacterial & mycotic structures and functions; Bacterial antigens & toxins.
12. **Veterinary Extension Education:** Extension education strategies and techniques for the transfer of livestock technology to farmers, impact assessment of technologies.
13. **Veterinary Gynaecology and Obstetrics:** Reproductive diseases in male and female, diagnosis, treatment and management, artificial insemination and augmentation of fertility. Pregnancy diagnosis pre and post parturient disorders in livestock. Semen freezing, quality control, its in-vitro fertility tests and fertility markers. Ultrasonography, laparoscopy, embryo transfer techniques.
14. **Veterinary Immunology:** Morphological and functional characterization of cells of innate and acquired immune system. Molecular Immunology, Immune effector cells and molecules, microbial immunity, immunodiagnostic and immunoprophylactics, tumour immunity. Role of immunomodulators in immunity.
15. **Veterinary Medicine:** Production & deficiency diseases; alternative system of medicine; environmental toxicity & its amelioration; gastrointestinal disorders; management of mastitis; diseases of skin; preventive medicine; canine medicine and forensic medicine.
16. **Veterinary Parasitology:** Helminthology, protozoology, entomology, molecular parasitology with particular reference to immunodiagnosis, immunoprophylaxis and control of parasitic diseases of economic importance.
17. **Veterinary Pathology:** Molecular pathology, immunopathology, pathology of infectious diseases, metabolic, nutritional and toxicopathology, experimental pathology, comparative pathology, oncology and Avian Diseases.
18. **Veterinary Pharmacology and Toxicology:** Chemotherapy, drug development, advanced pharmacology, indigenous drugs, molecular pharmacology, pharmacokinetics, chemical residue.
19. **Veterinary Physiology:** Digestion and metabolism, bioenergetics, growth, neurophysiology and behaviour, environmental physiology, endocrinology, reproduction and embryo biotechnology.
20. **Veterinary Public Health:** Diagnosis, prevention and control of zoonotic diseases, foodborne infections and intoxications; environmental pollution and biomedicines.
21. **Veterinary Surgery and Radiology:** Orthopedics surgery, anesthesia, pain management, reconstructive surgery, cardiovascular and thoracic surgery, radiology and ultrasonography.
22. **Veterinary Virology:** Virus taxonomy, viral pathogenesis, cell-virus interaction, clinical and diagnostic virology, sero and molecular epidemiology, animal cell culture, molecular virology, animal viral prophylactics, animal viral drugs/ approaches, bio-safety.

20.2 Short-term Training Courses

The short term training courses in specialized areas are conducted at the institute for the benefit and enhancement of knowledge of veterinarians and other research personnel working at field level in livestock farms, disease investigation/diagnostic laboratories and in veterinary colleges/universities.

20.3 International Training Courses

International short term advance courses especially in the field of Animal Biotechnology/Biochemistry are conducted regularly as sponsored by various agencies like TCS Colombo Plan, etc. annually for the participants from various South East Asian, SAARC and other countries.

20.4 Centres of Advanced Faculty Training

Centres of Advanced Faculty Training (ICAR) in Animal Nutrition and Physiology & Climatology exist at IVRI. Two courses every year are organized under specific areas of each of these Centres. In addition to the staff of the Centre taking theory and practical classes, guest lecturers are also invited from other divisions of the institute and other organizations where expertise is available in newer areas so that the participants get complete knowledge of the course. Emphasis is laid on practical classes so that participants are fully exposed to the latest techniques and they develop confidence by doing the practical. These laboratories are equipped with state-of-art facilities.

SYLLABUS FOR WRITTEN EXAMINATION FOR DOCTORAL (PhD) PROGRAMMES

Animal Biochemistry [Code: BCT]

Scope and importance of Biochemistry in animal science. Cell structure and functions. Techniques of cell fractionation, Ultra-centrifugation and electron microscopy. Chemistry and biological significance of carbohydrates, lipids, proteins, nucleic acids, vitamins, and hormones. Enzymes, chemistry, kinetics, mechanism of action and regulation. Metabolic inhibitors with special reference to antibiotics and insecticides. Sub-unit structure of macromolecular and supra-molecular systems. Chemistry of antigens and antibodies and molecular basis of immune reaction. Separation of macromolecules of biological significance, their isolation, purification, and characterization. Radioimmuno assay and other binding essays. Calorimetry, spectro-photometry, chromatography and electrophoresis, Isotopic methods.

Bioenergetics and biological oxidation; Digestion of food, its absorption and energy metabolism in ruminants and nonruminants. Metabolism of carbohydrates, lipids, amino acids and nucleic acids. Bio Synthesis of Proteins and nucleic acids. Regulations of gene expression Chemistry of respiration and gas transport. Water and electrolyte metabolism. Nutritional needs for maintenance, growth and production. Significance of calorie proteins and essential amino acids. Deficiency diseases, metabolic disorders and clinical biochemistry. Metabolism of specialised tissues. Connective tissue, nervous tissue, muscle, blood, cartilage and bone and mammary tissue; Endocrine glands, Biosynthesis of hormones and their mechanism of action.

Fundamental principles of human nutrition. Nutritional significance of animal products. Environmental factors like heat, cold, radiation and environmental pollutants.

Animal Biotechnology (Code: BTY)

Cell biology, Molecular Biology and Genetic Engineering-The structure of animal cell, organization of the cytoplasm, cell organization of the cytoplasm, cell organelles, endoplasmic reticulum, Golgi complex, mitochondria, lysosomes, nucleolus and sub-nuclear structures, molecular organization of cell membrane and transport across cell membrane, cell-division and cell cycle, control of proliferation, cell to cell signalling, cell receptors, cell transformation, characteristics of tumour cells, oncogenes and their proteins.

Packaging of DNA and eukaryotic chromosome, organization of genes on chromosome, pseudogenes, eukaryotic genome sequestered in organelles and organelles expressing their own genes, mitochondrial genome in mammals, mammalian satellite DNA, Mobile genetic element, tandem gene clusters, Promoters, RNA processing and RNA splicing.

Gene structure, organization of prokaryotic and eukaryotic genome nucleases, DNA replication, DNA repair and recombination, RNA biosynthesis, genetic code, ribosomes, mRNA, regulation and control of transcription.

Transcription initiation and termination in prokaryotes and eukaryotes, processing of rRNA and tRNA editing.

Purine and pyrimidine bases of nucleic acids, synthesis of nucleic acids, importance of nucleic acids and nucleoproteins. *In vitro* DNA synthesis, oligonucleotides, role of DNA ligases, DNA and RNA polymerases of eukaryotes and prokaryotes and their mode of action, regulatory proteins that affect RNA polymerase, functional promoters RNA replicase and polynucleotide kinase, reverse transcriptase; protein biosynthesis, ribosomes and the

site of protein synthesis, RNA, amino acid activation for protein synthesis, regulation and control of translation and post translational modification.

Virus replication, description of major groups of DNA and RNA viruses, oncogenic viruses, animal viruses commonly used in molecular biology, recombination in bacteria, fungi and viruses, transformation, conjugation and transduction, molecular mechanism of spontaneous and induced mutations, site-directed mutagenesis.

Isolation and purification of DNA from prokaryotes and eukaryotes, DNA fingerprinting, RFLP, restriction enzymes, DNA cloning, cloning vectors, production of recombinant plasmids, construction of genomic and cDNA libraries, identification of specific clones, southern/northern blotting techniques, polymerase chain reaction, nucleic acid probes and nucleic acid hybridization, radioisotopes and their handling, recombinant DNA technology applications in animal health and production, biosafety, identification and isolation of important genes, gene transfer in eukaryotes, techniques of gene transfer.

Animal tissue culture and Hybridoma technology-Cell culture techniques, culture of different tissues and organs and its applications, maintenance and preservation of cell culture, nutritional requirements of cells, replica plating, *In situ* hybridization in cells and micro-manipulation.

Somatic cell hybrids in gene analysis of animal cells, theory of monoclonal antibody production, immunization of mice; myeloma cell lines and their maintenance, cryopreservation of clones, cell fusion, screening assays-ELISA, IFAT, RIA, subcloning, expansion of clones, *In vitro* and *in vivo* production of monoclonal antibodies, isotyping and binding of Mabs, application of Mabs in diagnostics.

Embryo transfer technology-Folliculogenesis, superovulation, hormonal control of ovulation, fertilization and embryo development, collection of embryos (surgical/non-surgical), embryo transfer, oocyte maturation *in vitro*, sperm capacitation, sperm-oocyte interaction, *in vitro* fertilization, *in vitro* and *in vivo* development of embryos; factors affecting embryo development *in vitro*, and embryo culture, embryo freezing, sexing, bisection and blastomere cloning of embryos, production of transgenic animals.

Biophysics and Bioprocess technology-General structure of proteins, enzymes and co-enzymes in protein function, membrane proteins, glycoproteins and glycolipids; physico-chemical characterization of proteins, classification of proteins and organization of peptides and proteins, conformation of polypeptides (protein) chain, protein folding; protein extraction from biological samples and their estimation, purification of proteins and electrophoretic analysis including western blotting. Structure and classification of amino acids, physico-chemical properties and analysis of amino acids; structure and functions of nucleic acids, structural and chemical features of various types of DNA and RNA, physico-chemical properties of DNA and RNA; microbial fermentation process, production of biomass, separation and purification methods, modification of specific products, continuous processing, immobilization methods for enzymes and cells, specific application of bioprocess technology in veterinary science.

Animal Genetics & Breeding [Code: AGB]

Overview of Genetics

History and development of genetics. Cell division and cell cycle; Chromosomal theory of inheritance. Cytoplasmic inheritance. Concept of gene. Mendelism and its deviation, Multiple alleles, gene interaction, linkage and crossing over. Penetrance and expressivity. Inheritance of sex linked, sex limited and sex influenced traits. Mutations, lethal genes; Gene modifiers. Sex determination and differentiation.

Population Genetics

Individual *versus* population. Gene and genotypic frequencies and factors affecting them: Hardy Weinberg equilibrium; Change in gene and genotypic frequencies due to systematic processes (mutation, migration & selection) and dispersive processes Balance between mutation and selection. Idealized population, Effective population size. Inbreeding, Co-ancestry, regular system of inbreeding, Path coefficient. Inbreeding depression and Heterosis

Quantitative Genetics

Continuous variation. Values and means: population mean, average effect, breeding value, dominance deviation, interaction deviation. Variance and its components: additive and dominance variance, interaction variance, environmental variance. Genotype x environment interaction, Genetic slippage. Resemblance between relatives: Offspring and one parent, offspring and mid parent, half-sibs, full-sibs. Concepts of heritability, repeatability, phenotypic, genetic and environmental correlations; Methods of their estimation, uses, possible biases and precision of estimates. Threshold characters and estimation of their genetic parameters. Genetic assimilation. Response to selection and its prediction, selection differential and intensity of selection. Measurement of response and realized heritability. Selection differential and intensity of selection. Short term and long term selection: Asymmetry of selection response and selection limit.

Inheritance of economic characters in livestock including poultry and genetic improvement programmes

Economic traits and their inheritance in different livestock species and poultry, Genetic improvement programs of livestock and poultry in India. Different mating systems and their phenotypic and genetic consequences. Basis of Selection, Methods of selection. Different methods of sire evaluation. Prediction of breeding values of sires under various milk recording schemes. Genetic improvement programmes for growth, production, reproduction and diseases resistance of livestock and poultry. Genetic divergence, general and specific combining ability; recurrent and reciprocal recurrent selection. Breeding plans under different agro climatic zones of India and constraints in their implementation. Crossbreeding Programmes in India. Role of artificial insemination/ ONBS/ MOET technology in animal breeding. Bull Mother Farms.

Animal genetic resources and its conservation

Origin, history and utilization of Domestic animal diversity in India. Present status and flow of Animal Genetic Resources and its contribution to livelihood security. Methodology for characterization of livestock and poultry breeds through systematic surveys. Uniqueness of breeds, social, cultural and economic aspects of the owners/ communities rearing specific breeds. Genetic characterization, diversity analysis and evolutionary relationship among

breeds/ species. Concept of conservation, in-situ and ex-situ conservation, models of conservation, priorities of breeds for conservations, National and International strategies for conservation of Animal Genetic Resources. Status, opportunities and challenges in conservation of AgNR. IPR issues pertaining to animal genetic resources. Registration of livestock breeds and protection of livestock owner's rights in India.

Molecular Genetics

Structure and properties of nucleic acids. Nucleic acid as genetic material. Central dogma, DNA replication/repair and recombination; genetic code; Transcription and translation in prokaryotes and eukaryotes; Genome organization, Regulation of gene expression, Genomic imprinting, rDNA technology, Molecular biology techniques and their application, Gene mapping: Genetic and physical, QTL mapping, DNA markers and their application, Marker Assisted selection, Marker Assisted Introgression, GWAS, Sequencing including Next Generation Sequencing, RNAi technologies and their application. Transgenesis.

Cytogenetics

Basic and fine structure of chromosome, Organization and types of chromosomes, Chromosomal profiles of various livestock species, Chromosomal aberrations, Karyotyping and chromosomal bandings (C, G, Q, R, NOR, High resolution), Chromosome painting, Artificial chromosome, Mosaicism and chimerism, In-situ hybridization techniques and their applications. Importance of cytogenetics in improvement of livestock species.

Immunogenetics

Immune response and genetic factors influencing the immune response to pathogens, Immune response (IR) genes (MHC and Non-MHC), Host-pathogen interactions and genetic basis of disease resistance.

Bioinformatics in Animal Genetics & Breeding

Definition; Scope of bioinformatics in Animal Genetics and Breeding. Concept of data base and computational biology. Biological database: definition, types and description. Introduction to NCBI: Literature, Entrez, nucleotide and genome specific resources; Data mining. Tools for sequence analysis, 3D structure and similarity. Different softwares pertaining to application of molecular biology in animal genetics and breeding.

Statistical methods in Animal Genetics and Breeding

Probability and distribution. Concept of univariate and multivariate models. Analysis of segregation - Detection and estimation of linkage for quantitative characters. Multiple correlation, Simple and multiple regression. Diallel and partial diallele crossing. Matrix algebra and their types. Basic concepts statistical inferences and balanced experimental design. Least squares ANOVA: Non-orthogonality of data, Least squares constant and data adjustment. Concept of Bayesian statistics and its application in Animal Genetics & Breeding. General linear models: fixed, random and mixed models. Generalized and weighted least squares, Estimation of fixed effects in one and two way classification with or without interactions. Estimation of variance components of random effects using least squares, maximum likelihood and restricted maximum likelihood methods. Concept of BLUP and BLUE, Different Henderson's Models, Softwares for estimation of variances. Nested and cross classification of data. Multivariate Techniques and their application: D^2 statistics, Fisher's discriminant function

Small Laboratory Animal Breeding

Breeding colonies of Mice, Rats, Hamster, Guinea Pigs and Rabbits. Selection and Mating Methods/system: Monogamous, polygamous and others. Development of genetically controlled laboratory animals: Rules for nomenclature, Inbred strains, Outbred stocks, Mutant stock, Recombinant Inbred strains, Transgenic strains. Gene targeting and production of gene knock out animals. Genetic control and monitoring, Record keeping. Ethics and legislations of Laboratory animal use

Animal Nutrition [Code: ANT]

General Nutrition: Carbohydrates, proteins and fats, their digestion and metabolism, Protein value of feed, measure of protein quality, application of protein quality in feeding practices and supplementary value of proteins; Intake and utilization of energy and nutrients of feeds. Essential fatty acids and their role in lipogenesis in relation to nutrition. Requirement of energy, protein, minerals (macro and micro). Vitamins and additives for poultry and pigs; protein-energy inter-relationship, comparative digestion of nutrients in various species.

Feeds and animals body composition; function of water in animal body; metabolism and utilization of nutrients (carbohydrates; fats; proteins, non-protein nitrogen, minerals and vitamins); rumen digestion and metabolism; effect of different feeds on rumen microbial activity. Classification of bacteria and protozoa, influence of various factors effecting the microbial activity. Maintenance of continuous fermentation system and a consideration of its limitation. Factors affecting rumen development; non-protein nitrogen metabolism in the rumen. Animal feeds and fodders, quality of forage related to production, various schemes of partitioning carbohydrates; limitation of the Weende methods of forage analysis; detergent method of feed analysis; chemical and biological evaluation of feeds and forages including *in vitro* digestibility trials; study of animal energetics and basic description of animals relative to the requirements of energy and protein; role of antibiotics, hormones and other biostimulators; importance of trace minerals in ruminant nutrition and their relationship with vitamins and hormones.

Applied Nutrition-Feeding standards, their evolution and significance, feeding standards as hypothetical rations; feeding standards as indispensable guides, protein, vitamin and mineral supplements; translation of feeding standards in meal mixture specification, preparation of mixed mineral supplements; flexible formula for non-ruminant meal mixtures, creep rations for piglets, quality control of feedstuffs, ISI standard; feed cost of non-ruminant production; efficiency of non-ruminants for feed conversion into animal products.

Statistical design and evaluation of feeding trials; Nutrient requirement of cattle, buffaloes, sheep and goats at various stages of growth, production and reproduction; present feeding standards and their limitations; factors affecting the nutritional requirements of ruminants; nutrients and their metabolism with reference to production and composition of milk, meat and wool; Relation of feed value to its chemical composition; nutritional factors affecting the quality and quantity of milk, meat and wool; input-output relationship and feed conversion efficiency for different traits; methods and procedures used in formulating economically balanced rations, calf starters, efficiency of feed conversion into animal products; agro industrial by-products; their feeding value and incorporation in meal mixtures; supply and demand of animal feeds in the country.

Livestock Production & Management (Code: LPM)

General concept of livestock production and management in Indian agroclimatic and socio-economic conditions; Impact of livestock farming in Indian agriculture; Breeds, population and production statistics of various livestock species *i.e.* cattle, buffaloes, sheep, goats and pigs in India and their comparison with world statistic; various livestock development project programmes and their performance; role of livestock farming in poverty alleviation among rural poor.

Concepts of livestock housing under tropical and temperate climate adaptation and acclimatization; thermoregulation, heat tolerance of domestic animals; heat stress and summer management of livestock; types of animal housing; detail of loose housing for dairy cattle and buffaloes; space requirements for various categories of livestock in different housing Systems.

Production and reproduction management of different species of livestock; lactation management; physiology of lactation and milk secretion; concept of machine milking in dairy cattle and buffaloes.

Labour requirement for different farm operations of various species of livestock farms; animal transportation and its regulations; knowledge of various livestock farm equipment and their maintenance.

Livestock behaviour and performance; application of knowledge of livestock behaviour for the effective management of various species of livestock; concept of livestock behaviours and welfare measures; classification of livestock behaviours.

Specific management practices for various species of livestock; rearing young and growing stock; management of milch, dry and pregnant stock; management of breeding stock; concept of mixed farming.

Feeding management of various livestock species; health care and management of livestock; preventive measures to be taken in livestock farms.

Importance of bullock power in Indian agriculture; bio-gas production; utilisation and waste management of livestock farms; livestock insurance; livestock project planning and financing; role of cooperatives for livestock development.

Livestock Products Technology [Code: LPT]

Composition: Meat, milk, fish, poultry and eggs; Technology of processing and preservation of livestock products; methods and equipment; Methods of processing and storage of meat and meat products, milk and milk products, eggs and poultry meat; Industrial food preservation, refrigeration, freezing, freeze drying, dehydration, canning, radiopasteurization, chemical: additives, curing, smoking, cooking of meat products. Nutritional, chemical organoleptic and microbiological quality of animal foods; Evaluation and maintenance of quality and wholesomeness; Factors affecting quality of foods. Postmortem aspect of muscle as meat: Ageing of meat; histological and chemical changes; Tenderization and other uses of proteolytic enzymes; Production of protein hydrolysate and other processed foods. New product developments.

Processing and utilization of various animal by-products. Slaughter-house offal, methods of utilization, blood hides and skins, bones, horns and hooves, wool, hair and feathers, glands casings and other minor by-products; Animal by-product plant, planning, sanitation methods of operation. Marketing, Livestock production and supply characteristics; meat consumption and related demands; types of markets and trends in

marketing livestock products and by-products; wholesale retail, future trends; consumer education and awareness, Grades and grading and quality control; regulatory and inspection measures, I.S.I. standards. Corporate bodies in regulating markets, marketing boards, internal trade and development of international market for livestock products; Economics of production; processing, preservation and distribution.

Origin and source of animal foods, Lay out construction, designing, organisation, maintenance and management of abattoirs, Preslaughter care and slaughtering techniques for different kinds of meat animals and birds. Emergency slaughter; Elements of meat hygiene; Ante-mortem and postmortem inspection; condemnation and destruction of unit material; Physical and chemical characteristics of meat tissue and principal organs. Facilities relating to sanitation in plant operation. Adulteration and misrepresentation of meat; Biochemical and deteriorative changes in meat, State municipal and other regulations pertaining to meat trade, Bacterial, parasitic and other meat borne infections and infestations; Spoilage of meat and meat products, Regulation and implication of chemical additives used in meat, Sanitary standards for meat packing plants and meat stalls. Labeling and inspection of processed meat, foods; Meat products order.

Poultry Science [Code: PSC]

Genetics and Breeding-Breeds and breed characteristics; Mendelian traits in poultry-Its inheritance and usefulness; Economically important poultry inheritance; Gene action influencing them. Population genetics and path coefficients affecting such traits; heritability and Genetic correlations-their computation and application; Selection-natural, artificial, directive, disruptive, stabilizing individual, size and dam family, sib selection, progeny testing, combined selections; Construction of selection indices utilizing various economics traits', Restricted selection indices; Closed flock selection versus inner-population selection, recurrent and reciprocal recurrent selection in poultry; part record versus full record selection response to selection plateae; Control population-its necessity and formation; Mating systems and their comparative efficiency in realizing response to selection; Inbreeding-its concept, measurement and effects; Development; evaluation and maintenance of inbred lines in poultry; Diallel crosses; Estimation of general and specific combining abilities, material effects; sex linked effects and heterosis.

Genotype or environment interactions: poultry; industry in India-its segment-Commercial hybridization; evaluation of test crosses; Random Sample test, practical breeding programme for broilers and layers; Dwarf gene and its usefulness in broiler and laying hen breeding. Selection for disease resistance; Blood groups; Biochemical polymorphism and their usefulness in poultry; Behavioural genetics-its importance.

Avian Nutrition-Carbohydrates, fats, proteins, nucleic acids-classification and properties, vitamins and minerals, properties, functions, deficiency state, source, requirements, feed additives-properties and functions.

Energy-Partition, Systems determination, evaluation of different system, heat increment, Metabolizable energy- utilization for growth and egg production, responses to energy restriction by growing chicken and layers; Proteins-Essential and critical aminoacids, inter-relationship among aminoacids, responses to lysine, methionine (+cystine) restriction by growing chicken and layers; Proteins-evaluation of quality by chemical, enzymatic, microbial and biological methods. Nutrient requirement-Methods of expression, factors affecting varying feed intake and nutrient intake, factors varying the nutrient requirement. Various standards for nutrient requirements.

Feeds-Sources of energy and nutrients; toxic constituents of feeds and methods of detoxification, supplementary value of food proteins, agroindustrial by-products, forest wastes and animal by products; Feeds formulation-Principles and methods; feed formulation for different classes of poultry, high energy feeds, nutrition of breeders, nutrition of caged birds, practical limitations, least cost poultry diets; Feeding systems-Methods; evaluation of different methods of feeding chicken.

Avian Physiology-Digestion, metabolism of carbohydrates; fats proteins; physiology of growth; Female reproduction, egg formation and factors influencing egg formation and production. Male reproduction and factors influencing fertility, Embryonic development; Role of endocrine glands; Respiration; regulation of body temperature; Physiological changes due to stress. Climatic factors and its influence on birds.

Avian Products Technology-Commercial egg and meat production; Egg structure and chemical composition; Grading of eggs and ISI standards; Internal quality of egg components and their nutritive value; Poultry dressing plants; steps in dressing and processing of chicken; Dressing yields; Cold storage of eggs; egg products; meat and meat products; Evaluation of meat quality-Physical, chemical and organoleptic; Utilization of poultry processing waste; feathers, offals, shanks etc., Different products of egg and meat; Preparation of egg powder and its utility. Microbial spoilage and methods of preservation of egg and meat; Methods of packing, transportation and marketing of eggs and meat.

Avian Health-signs of disease outbreak and procedures for early diagnosis; principles of disease control *viz.* vaccination schedules; treatments; Sanitary and quarantine measures, other precautionary methods during outbreaks; Carcass disposal; Important Bacterial diseases *Viz.* Pullorum Disease, Fowl Typhoid and Paratyphoid, Fowl Cholera, Infectious Coryza, Chronic respiratory disease, Spirochaetosis, Ulcerative enteritis; Important Viral diseases, *Viz.* Ranikhet disease, Infectious bronchitis, Infectious Laryngotracheitis, Fowl Pox, Marek's disease, Avian Leucosis complex, Infectious bursal disease, Avian Encephalomyelitis, Systemic fungal diseases, *viz.* Aspergillosis (Alfatoxicosis, brooder pneumonia), Thrush (candidiasis). Common parasitic diseases *viz.* Round worms, Tape worms, External parasites *viz.* ticks, lice, fleas and mite. Protozoan diseases *viz.* Coccidiosis, Enterohepatitis and blood protozoan parasites. Disease syndromes *viz.* egg drop syndrome, fatty liver syndrome, Stress factors.

Incubation and Hatching- Principles of incubation, collection and storage of fertile eggs; factors influencing fertility and hatchability; Hatchery, sanitation and maintenance, Utilization and disposal of hatchery wastes; Pre-requisites of good hatchery, layout and equipment required; Housing-Location and site selection-Ideal layout of poultry houses for different systems of rearing, Controlled environment and open-sided houses: Types of material used for construction taking into consideration availability and different climatic conditions; Role of cross ventilation and effect of air pollutants and obnoxious gases in poultry houses.

Brooding and Rearing: Principles and methods of brooding Space requirement for housing, feeding and watering. Free range and confinement systems of rearing, cage versus floor and salt systems, advantages and disadvantages; Staking densities their effect on production: Types of cage for Starters; grooves and layers; Effect of artificial light on material and egg formation and production; Types of litter and their characteristics; Litter management and their subsequent utility.

Poultry Housing Equipment-Types of brooders; Feeders, waterers laying nests; chick guards, crates, catching hooks, perches etc.

Common Management Problems: Cage layer fatigue, Fatty liver syndrome, Flightiness, Hysteria, Egg eating, cannibalism, Rodent and fly problems. Wet litter and ammonia, dust and air pollutants in the sheds; Replacement of stock, Forced molting. Methods and programmes of molting, culling of layers.

Farm Economics- Production cost of eggs, Chicken, pullets and broiler, Feasibility reports for setting up small and large layer and broiler units. Poultry industry in India, its growth and futurology.

Veterinary Bacteriology [Code: VBM]

Bacteriology-Classification and nomenclature of bacteria; Structure, function and chemistry of bacterial nuclear apparatus, cytoplasm, intracellular granules, cell wall, cytoplasmic membrane, mesosomes, capsule, flagella, fimbriae, endospores, protoplasts, spheroplasts, Forms, involution forms. Bacterial stains, staining and microscopy, Growth and nutritional requirements of bacteria, bacterial enzymes, respiration in bacteria, reproduction and growth phases of bacteria. Effect of Chemical and physical agents and antibiotics. Bacterial variations including transduction, transformation and conjugation.

Systematic study of bacteria belonging to genera, *Borrelia*, *Leptospira*, *Campylobacter*, *Pseudomonas*, *Brucella*, *Escherichia*, *Citrobacter*, *Salmonella*, *Shigella*, *Klebsiella*, *Enterobacter*, *Proteus*, *Vibrio*, *Haemophilus*, *Pasteurella*, *Actinobacillus*, *Fusobacterium*, *Moraxella*, *Staphylococcus*, *Streptococcus*, *Bacillus*, *Clostridium*, *Listeria*, *Erysipelothrix*, *Corynebacterium*, *Nocardia*, *Rickettsia*, *Chlamydia*, *Mycoplasma* and *Acholesplasma*.

General characters, classification and study of important pathogenic fungi.

Veterinary Extension Education [Code: EXT]

Extension education, objectives and principles; Formal and informal extension education; Growth of extension education as a discipline and profession; Extension education in relation to agricultural development: (including Animal Husbandry), Genesis of agricultural development/ rural development programmes in India- leading to the concepts of reorganized extension services and integrated rural development programme. Role of extension education in development programme; Comparative studies of extension education system in selected developed and developing countries.

Extension teaching methods and audio-visual aids. Teaching and learning processes in extension education; Extension teaching methods and audio-visual aids and their classification; Selection and use of extension methods and audio-visual aids; Effective combination of extension teaching methods; Audio-visual aids and their role in transfer of technology; Social psychological considerations in use of audio-visual aids; Combining and using audio-visual aids for effective teaching, Production of low cost audio-visual aids.

Programme planning in extension education. Principles and processes; planning process; Methods of identifying needs; Securing participation and bringing co-ordination in programme planning process; Importance of Five Year Plan in India; Agricultural and Animal Husbandry Development programmes in action. National demonstrations. Operational research project, and lab to land programme, Evaluation as an integral part of programming.

Extension administration. Nature and characteristics; Extension administration versus general administration; Genesis of agricultural administration with special reference to extension service in India; Principle and theories of administration; Role and function of extension administrations; Factors affecting the extension administration, Organizational

set-up for extension services in India including the Training and Visit system at different levels.

Training of extension personnel and farmers. Principles and importance of extension training. Types of training programmes for extension personnel and farmers; Emerging patterns and models of extension training; Factors affecting extension training, Efficacy of training, T & V system its merits and demerits. Methods of identifying training needs. Small group techniques in training. Assessing training effectiveness; Training facilities available in India for different extension personnel and farmers.

Concepts features and designs of various programmes in India, integrated Rural Development (IRD), T&V system of Extension, Drought Prone Area Programme (DPAP), Small Farmers Development Agencies (SFDA), National Rural Employment Programme (NREP); Extension Programme for Rural Women; Training of Rural Youth for Self employment (TRYSEM); Lab to land Programme (LLP), National Demonstration (ND: Krishi Vigyan Kendras (KVKs); Operational Research Project (ORP) and Farmers Training Centre (FTC)“.

Basic rural Institutions engaged in rural development. Structure and function of rural institutions and process of activating them; Factors influencing their involvements in rural development; Concept and theories of leadership, Identification and training of local leaders, Basic patterns of leader-group relationship in rural society; Role and importance of local leaders in rural development. Rural sociology and social psychology- their scope and importance in extension work. Concept of human society; characteristics of rural people; Scientific study of human behaviour, Socio-psychological factors in transfer of technology, Theory and principles of social structure; Social interactions and processes; Process of socialization values and norms of rural social system; resulting socio-psychological changes in rural society.

Diffusion and adoption of innovation. Models and theories of diffusion and adoption; Process of diffusion and adoption, Adoption process and sources of information; Adoption curve-adoptors categories and their characteristics: Factors associated with adoption and rate of adoption; Role of adoption in relation to attributes of innovations; Role of change agents in adoption and diffusion; consequences of adoption of innovations.

Process and media of communication: Models and theories of communication; Nature and importance of communication; Communication process and elements of communication; Fidelity in communication and factors affecting it; Role of mass media in transfer of technology; Effective media-mix for rural audience; Problems and barriers in communication.

Research and evaluation in extension programmes: Social research and evaluation in extension programmes; Process of scientific research-various designs; Measurement, levels of measurements and corresponding statistical techniques; validity and reliability of measuring devices; Methods of observation and data collection; Techniques of tabulation; analysis of data and report writing; Importance of research and evaluation in extension programmes.

Veterinary Gynaecology & Obstetrics [Code: VGO]

Gynaecology-Functional anatomy of female reproduction-Anatomy and pre-natal and post-natal development of the reproductive organs of female farm animals and their specific sexual functions. Functional histology of the female reproductive organs; Physiology of Reproduction-Endocrinology of reproduction in females; Hypophysial hormones, Gonadal

Steroid hormones, and placental hormones; their chemical structures, functions and mechanism of actions. Prostaglandins and synthetic hormones, hormonal interrelationships; Neuroendocrinology of reproduction-Hypothalamus, neurohypo-physis and pineal gland, Reproductive life cycles-Foetal and neonatal life; puberty, adult sexuality, aging and fertility; Folliculogenesis-egg maturation and Ovulation; Transport and survival of gametes sperm transport in the female reproductive tract, ova pickup and their transport in the oviduct; gamet transport and conception rate; fertilizable life and ageing of egg. Transuterine migration and loss of eggs; Embryonic development in oviduct; Fertilization, Cleavage and implantation; Gestation, Maternal physiology in pregnancy, prenatal physiology and parturition; Anatomy of the udder, mammary growth and lactation, sexual maternal and neonatal behaviour.

Reproductive cycles-Reproductive cycles in cattle, buffaloes, sheep, goats, swine and horses. Puberty; oestrus Ovulation and oestrus Cycles, Breeding and conception. Gestation, parturition. The post-partum period. Reproduction efficiency.

Reproductive failure-Reproductive failure in female farm animal, ovarian dysfunction, disorders of fertilizations, prenatal mortality, perinatal and neonatal mortality, disorders of gestation, parturition and lactation; sexual health control; diagnosis, prevention and control of different reproductive disorders.

Techniques for improving reproduction efficiency- Artificial insemination of the female; Induction and synchronization of ovulation-Control of ovulation; Clinical methods of inducing ovulation in different farm animals; Synchronization of ovulation; pregnancy diagnosis. Laboratory methods-Pregnancy diagnosis in cow, mare, ewe and sow; Embryo Transfer-Superovulation, collection of ova, selection of ova for transfer. Transfer of Ova, Synchronization of oestrous between donor and recipient-Composition of media for embryos; Storage of embryos-maintenance of pregnancy after embryo *in-vitro* maturation of oocytes, *in-vitro* fertilization-potential uses and limitation of embryo transfer and related techniques.

Obstetrics-Obstetrical Anatomy-Diseases and Accidents during the Gestation Period, Abortion in Cattle, Horses, Swine, Sheep and Goats; Mumification of the Fetus, Fetal Maceration; Prevention of Conception and induction of Abortion; Extra- uterine pregnancies and fetuses; Dropsy of the fetal membranes and abdominal hernias resulting in hysterocael; Torsion of the uterus;

Vaginal prolapse; Paraplegia of pregnancy, Miscellaneous accidents during pregnancy; Parturition-Normal parturition; Artificial interferences in normal parturition; Diseases and care of the newborn, care of the postpartum dam; Dystokia-Cause of dystokia; Diagnosis of various types of dystokia, obstetrical operations for relieving dystokia, Injuries and diseases of the puerperal period; infertility-infertility in the cow; Infectious diseases, Miscellaneous Infestation of the bovine female genital tract; Hormonal disturbances resulting in Infertility; causes; Pathological causes.

The "Repeat Breeder" cow. Management problems-Infertility in the mare, sow, ewe and doe.

Andrology, Seminology and Artificial insemination; Andrology and Seminology-Functional anatomy of reproduction in male farm animal; Endocrinology and neuroendocrinology of male reproduction; Mechanisms of action of gonadotrophins, Puberty and sexual maturity; Spermatogenesis; Factors affecting spermatogenesis; Passage of sperm through the excurrent ducts; Function of epididymis; Semen and its various

components; Metabolism of semen; Sexual behaviour-endocrine and neural mechanisms of sexual behaviour; factors affecting sexual behaviour; contribution of gonads and accessory sex glands to semen ejaculate; survival of sperm *in vivo*, *in vitro* and the female reproductive tract; fertilizable life of sperm; hereditary, congenital and acquired factors leading to infertility, abnormalities of sperm; Bacteriological aspects of semen and diseases transmissible through semen; sexual health control, diagnosis, treatment and prevention of different types of infertility.

Artificial Insemination-Advantages and limitations; sterilization of artificial insemination equipments; methods of collection of semen; evaluation of semen; principles of sperm preservation; extension of unfrozen semen and extenders used for the same; principles and techniques of freezing of spermatozoa, Storage and transportation of semen; Insemination Techniques; dose, time and site of insemination; conception rates; measures of reproductive efficiency; management and training of males for use in artificial insemination.

Veterinary Immunology [Code: VIM]

Some historical perspectives, basic concepts of immunity, host-parasite relationship, defence mechanism of hosts, types and grades of immunity, local and non specific immunity. Factors influencing immunity. Antigens and their properties, specificity, haptens. Heterophilic antigens and Bacterial toxins, Immunoglobulins, classes of immunoglobulins, their structural and functional properties, comparison of immunoglobulins, immunogenetics, synthesis of antibody. Types of cells in antibody formation, theories of antibody synthesis, mechanism of antigen antibody reactions. Precipitation, complement fixation, ELISA, RIA etc., Allergy, Hypersensitivity, Types of Hypersensitivity, Cellular and Humoral responses, Transplantation, Immunological tolerance, autoimmunity, Tumour immunity, graft rejection, Major Histocompatibility antigens and their significance, Lymphokines, Interferon, Inter-leukins etc.

Veterinary Medicine [Code: VMD]

Clinical Examination of Patient: General clinical examination, anamnesis and determining the present status, general examination with regard to signalment of the patient, habitus, skin, conjunctiva, temperature. Special examination of the cardiovascular, respiratory, digestive, urino-genital, nervous, muscular and lymphatic systems. Special examination with regard to locomotion, allergic and serological tests, examination of blood, urine, faeces and special diagnostic procedures like passage of stomach tube, catheters, exploratory puncture, rectal examination, use of ophthalmoscope and radiological examination.

Diseases of digestive system and peritoneum: stomatitis, parotitis, pharyngitis, paralysis of pharynx, paralysis of oesophagus, obstruction of oesophagus, oesophagitis, dilation of oesophagus, vomiting, impaction of rumen and tympany, traumatic reticulitis, impaction of omasum, omasitis, abomasitis, displacement of abomasum, indigestion in ruminants, constipation, Gastritis, enteritis, obstruction of intestines, diarrhea, dysentery and colic in equines. Peritonitis, ascites, volvulus, intussusception.

Diseases of liver and pancreas: Jaundice, hepatitis, cirrhosis, hepatic abscess, pancreatitis.

Respiratory system: Rhinitis, epistaxis, laryngitis, tracheitis bronchitis, pulmonary emphysema, pulmonary oedema, pneumonia, pleurisy, hydrothorax, and pneumothorax.

Circulatory system: pericarditis, myocarditis, endocarditis, hypertrophy of heart, dilatation of heart, heart failure, bradycardia, tachycardia, Diseases of the blood vessels, **Diseases of the blood and blood forming organs:** Dehydration, haemorrhage, shock, oedema,

anaemia, leukaemia, leucopaenia and abnormalities of acid base balance. Diseases of the spleen and lymphnodes.

Urino-genital system; Albuminuria, chronic haematuria in cattle, nephritis pyelonephritis, cystitis, urolithiasis, retention of urine, paralysis of urinary bladder, urethritis and prostatitis.

Skin and Muscular system: Pruritis, urticaria, pityriasis, eczema, dermatitis, dematophytosis, dematosis, keratosis, hyper keratosis, para keratosis, erythema, psoriasis, pyoderma, acanthosis, dermatomycosis, elephantiasis, alopecia, ecthyma, acne, impetigo, seborrhoea, myositis, muscular atrophy and muscular dystrophy.

Nervous system: Meningitis, encephalitis, sunstroke, heat stroke, lightning stroke, vertigo, epilepsy, eclampsia, chorea, spinal meningitis, neuritis.

Ocular diseases: Conjunctivitis, Keratitis, iritis, cataract, iridocyclitis glaucoma, corneal opacity, iriditis, amaurosis, retinitis, uvetis.

Diseases of ear: Otitis externa, otitis media, otitis interna, otorrhoea, labyronthitis, perforated drum, tympanitis.

Veterinary Jurisprudence: Legal duties of veterinarian, examination of animals for soundness, examination of injuries, postmortem examination, causes of sudden death in animals, collection and dispatch of material for chemical analysis, detection of frauds, evidence procedure in court, legal enactment in I.P.C. relating to animals, provincial and central acts relating to livestock, code of conduct and ethics of Veterinarians.

Common infectious diseases of livestock: Mastitis, Colibacillosis, Tetanus, Enterotoxaemia, B.Q., H.S., Praturerculosis, Tuberculosis, Brucellosis, Leptospirosis, Swine erysipelas, Listeriosis, Glanders, CCPP, CBPP, Tyzzer's disease, Coccidiosis in rabbit, Parasitic gastro enteritis, Fascioliasis, Amphistomiasis, Schistosomiasis, Filariosis, Gid, Trypanosomiasis, Babesiosis, Thilerosis, mange and mites. FMD, Ephimeral fever, PPR, IBR, Rabies, ICH, CD, Parvo, Contagious ecthyma, Swine fever, Blue tongue, Infectious equine anaemia, Equine viral arteritis, Anaplasmosis, Ehrlichiosis, Rocky mountain spotted fever, Q-fever.

Production and deficiency disease of farm animals: Parturient paresis, Downers cow syndrome, eclampsia, Hypomagnesaemia tetany, PPH, Azoturia, Ketosis, Diabeties, Hypo and hyperthyroidism, Deficiency diseases of vitamins and minerals.

Endocrionological disorders.

Chemical poisons and bio toxicants: Lead, Mercury, Arsenic, Selenium, Fluoride, Nitrate and nitrite, Organ phosphorus and chlorinated hydrocarbons. Snake bite, Lantana poisoning, Bracken fern poisoning.

Special Therapeutic Approaches: Veterinary fluid therapy with fluid, electrolyte, plasma expanders, packed cell transfusions, etc. Clinical assessment of their requirement and doses. Blood transfusion with blood groups in animals-their therapeutic significance. Blood matching methods. Oxygen therapy.

Poultry Disease: Etiology, epidemiology, pathogenesis, clinical manifestations, diagnosis, treatment and control of the following diseases of poultry: Newcastle disease, IBD, ILT, mycoplasmosis, coccidiosis, salmonellosis, necrotic enteritis, malabsorption. leucosis. Marek' disease, mycotoxicosis, avian encephalomyelitis.

Veterinary Parasitology [Code: VPA]

General classification, morphology, life cycle and bionomics of trematodes, cestodes and nematodes belonging to the following families affecting livestock with particular reference to the epidemiology, clinical signs, pathogenesis, diagnosis, ecology, immunity, control, economic importance and zoonotic importance.

Cestoda (Platyhelminthes)-Mesocestoididae, Anoplocephalidae, Dilepididae, Hymenolepididae, Davaineidae, Taeniidae, Diphyllbothriidae.

Nematoda, (Nemathelminthes), Acanthocephala and Annelida- Acaridae, Nanisakidae, Ascaridiidae, Oxyridae, Heterakidae, Rhaditidae, Strongylidae, Trichonematidae, Stephanuridae, Syngamidae, Ancylostomatidae, Amidostomidae, Trichostrogylidae, Ollulanidae, Dictyocaulidae, Metastrongylidae, Protostrongylidae, Filaroididae, Spiruridae, Thelaziidae, Accuridae, Terameridae, Physalophteridae, Gnathostomatidae, Setariidae, Dracunculidae, Trichinellidae, Trichuridae, Dioctophymidae, Polymorphidae, Oligacanthorhynchidae, Pachysentidae, Gnathobdellidae.

Recording system, laboratory procedures, planning of control programmes and experiments in the study of helminthiasis in livestock.

Helminthic immunity-Host-parasite relationship; Types and grades of immunity, mechanism of host resistance, effect of host's immune reactions on helminths, antigen antibody system, antigenic characters of helminths, cellular and humoral factors in immunity to helminths; latent infection and premunity, self cure phenomenon, larva migrans; allergy and allergic reactions; mechanisms of serological manifestation of antigen antibody reaction; immunodiagnosis, immunoelectrophoresis and immunofluorescence.

Veterinary Protozoology-Classification, morphology, nutrition and reproductive processes and patterns, life-history, transmission, pathogenicity, and control (Prophylactics & therapeutics against important species belonging to the following families and genera):

- Trypanosomatidae (*Trypanosoma*, *Leishmania*)
- Trichomonadidae (*Tritrichomonas*, *Giardia*)
- Mastigamaebidae (*Histomonas*)
- Endamoebidae (*Entamoeba*)
- Balantiidae (*Balantidium*)
- Eimeriidae-Coccidia (*Eimeria*, *Isospora*, *Cryptosporidium*, *Sarcocystis*, *Toxoplasma*)
- Plasmodiidae (*Plasmodium*)
- Haemoproteidae (*Haemoproteus*, *Leucocytozoon*)
- Babesiidae (*Babesia*); Theileriidae (*Theileria*), Haemagregarinidae (*Hepatozoon*).

Symptoms of diseases, caused by these parasites in livestock, and drugs employed in the treatment of such conditions; host parasite relationship; immune responses; immunodiagnosis and immunizing procedures; epizootiology and zoonotic importance.

Veterinary entomology-Classification of arthropoda, with special reference to insects and acarines of medical and veterinary importance, morphology, life history, transmission, pathogenicity of the genera and species responsible for injury and disease transmission to livestock in the following groups:

Insecta-Phthiraptera (Anoplura and Mallophaga); Hemiptera; Coleoptera; Apahaniptera; Diptera (Ceratopogonidae, simuliidae, Psychodidae, Culicidae, Tabanidae, Anthomyiidae, Tachinidae, Oestridae, Hippoboscidae).

Acarina-Ixodidae (Argasidae, Isodidae); trombidigormes (Trombiculidae,

Pediculoididae, Demodicidae, Cheyletidae, Myobiidae); Sarcoptiformes, Psoroptidae, Acaridae, Laminosioptidae, Analgesidae, Dermoglyphidae).

Pentastomida-Porocephalidae (Porocephalus, Linguatula-Control of parasitic arthropods and vectors, physical, chemical and biological insecticides and their application; toxicology and antidotes of important insecticides; principles of integrated control.

Veterinary Pathology [Code: VPL]

Etiology of diseases and concept of multiple-factor etiology; Predisposing factors of disease; Extrinsic or environmental factors in relation to soil, air, humidity and temperature; Susceptibility and resistance to disease; Intrinsic factors *e.g.* species, age, sex heredity, Physical agents; Mechanical Injuries, heat, cold, decreased atmospheric pressure, injuries due to light *e.g.* photosensitization, injuries due to electricity; Chemical agents as causes of disease, Poisoning caused by Exogenous and Endogenous poisons; Microorganisms and animal parasites; Bacteria, fungi and viruses; protozoa, platyhelminthes and nemathelminthes.

Inflammation-Macrosopic and microscopic observations, chemical mediators of increased vascular permeability; Chemotaxis and phagocytosis; Adhesions and emigration of leucocytes, sequence of cellular reaction; Formation of abscesses, Defence mechanism and reticulo-endothelial system; chronic inflammation; non-suppurative and suppurative granulomatous reactions; Reaction of blood to injury-Reaction of the plasma; Blood coagulation and retraction of clot, cellular reaction; Haemostasis and thrombosis and subsequent changes in thrombi. Effects of thrombosis and embolism. Haemorrhage and shock; Oedema-Tissue fluid formation, lymphatic drainage; general fluid balance; Inflammatory oedema, oedema of venous and lymphatic obstruction, cardiac and pulmonary oedema; Fever-Causes of fever, fever producing substances; functions of fever; Degenerative changes and their consequences-Degenerations and infiltrations; Cloudy swelling and hydropic degeneration; fatty changes; glycogenic infiltration; amyloid infiltration; hyaline degeneration; Necrosis, classification and autolysis; Gangrene.

Healing-Microscopical changes of healing tissue; Healing of wounds by first intention; formation of granulation tissue; Healing by second intention; Factors influencing wound healing; Control of healing process, local and general factors influencing healing; Healing of some special tissues; Mucous membranes, liver, kidneys and urinary passages, respiratory tissue, cartilage, bone, muscle, nervous tissue; Atherosclerosis- Morphology of atherosclerosis, Pathogenesis of the lesions, Chemical constituents of normal and diseased arteries, reactions of intima to injury; the organization of surface deposits; Pathological consequences of chromosomal abnormality-Pathological effects of radiation of higher animals-Acute effects of radiation, histological changes in haemopoietic and lymphoid tissues. Late effects of total radiation; Ageing, leukaemia, carcinogenic effects; Host-parasite relationship. Germ theory of disease, and the relationship between host and parasite; factors determining invasion; barriers to invasion; Types of infection-Pathological features of mycotic, bacterial and viral infections; pathology of infections due to protozoa, platyhelminthes and nemathelminthes; Immunopathology, Hypersensitivity reactions-Anaphylaxis, cytotoxic antibody reactions, immune complex, Arthus type reaction, delayed hypersensitivity; Hypersensitivity to drugs and chemicals; Auto-immune type hypersensitivity reactions; Rejection of transplanted tissues; Immunological deficiency States; Pathology of nutritional diseases-Protein deficiency; carbohydrate deficiency; mineral deficiency; vitamin deficiency; Growth and its disorders-Metaplasia; atrophy; hypertrophy;

hyperplasia, Nature of tumours, growth-Growth etiology, classification, morphology and behaviour of tumours; Benign and malignant tumours in domestic animals, their pathological features and diagnosis.

Functional disturbances, malformations, degeneration, circulatory disturbances, inflammation and pathogenesis of the cardio-vascular system. Pathology of haemic and lymphatic system, anaemia; Lymphangitis and lymphadenitis. Circulatory disturbances and inflammation of different parts of the respiratory systems; Aetiology, pathogenesis, classification of specific pneumonia and pneumoconiosis. Circulatory disturbances and inflammation of different parts of digestive system; congenital abnormalities of intestines; Disturbances of circulation and pigmentation, degeneration, necrosis and cirrhosis of liver; Degeneration and inflammation of different parts of the urinary system; disturbances of growth and inflammation of various parts of genital system including mammary gland. Disturbances of circulation, growth and inflammation of bone and skeletal muscles. Inflammation of meninges, brain and spinal cord. Pathology of the endocrine glands, special sense organs and skin and its appendages. Pathology of bacterial diseases, mycotic infections, viral diseases, PPLO and rickettsial infections, and parasitic diseases.

Veterinary Pharmacology [Code: VPT]

General Pharmacology: Development and scope of pharmacology, sources and nature of drugs, pharmacopoeia and drugs compendia, pharmacokinetics (absorption, distribution, biotransformation and excretion), principles of drug action (factors modifying drug action, physicochemical basis of drug action, drug receptor interaction, types and sites of drug action etc.) and pharmaco-metrics (Principles of bioassay and pharmacological evaluation of different types of drugs, determination of LD₅₀, ED₅₀, organization of screening and drug development).

Drugs Acting on Central Nervous System: General anaesthetics, hypnotics, sedatives, anti-convulsants, tranquilizers and other drugs affecting behaviour, (including antipyretics and anti-inflammatory drugs) and CNS stimulants including analeptics.

Drugs Acting on Peripheral Nervous System; Adrenergics, anti-adrenergics, Cholinergics, anti-cholinergics, drugs acting on ganglia, muscle relaxants, (Including central muscle relaxants) and local anaesthetics.)

Drugs acting on Cardiovascular and Respiratory Systems: Drugs acting on heart, blood vessels, blood pressure, blood (coagulants and anticoagulants) and haemopoietic system. Expectorants, anti-tussives and bronchodilators.

Drugs Acting on Digestive System, Stomachics, antacids, carminatives and antizymotics, emetics and antimetics, cathartics, intestinal astringents, and drugs acting on liver, Pharmacology of rumen.

Drugs acting on Endocrine and Reproductive Systems; Pituitary hormones, thyroid hormone, and antithyroid drugs, parathyroid extract, insulin and other antidiabetic drugs, adrenal corticoids and sex hormones, Drugs acting on uterus and drugs used for fertility and contraception.

Drugs Affecting Body Fluids and Electrolytes; Drugs altering fluid balance, Diuretics, antidiuretics, Pharmacology of electrolytes and fluid therapy.

Autacoids: Histamine and antihistaminics, Serotonin, Polypeptides and prostaglandins.

General Chemotherapy: Historical development of chemotherapy, General principles of chemotherapy-selection of antimicrobial agents, combination therapy, mechanism and

problem of drug resistance, misuse of chemotherapeutic agents and public health problem. Drug allergy and hypersensitivity.

Pharmacology, Pharmacokinetics and Toxicity of the following groups of Chemotherapeutic Agents:

- (a) Sulfonamides: Gut-acting and systematic sulfonamides, Long- acting sulfonamides, Pharmacotherapy with sulfonamides.
- (b) Antibiotics: Natural and semisynthetic penicillins; Streptomycin and other aminoglycoside antibiotics (Kanamycin, Gentamycin, neomycin), Tetracyclines, chloramphenicol, macrolide antibiotics (erythromycin, oleandomycin, tyrothricin). Surface acting antibiotics (polymyxins, bacitracins), Antifungal antibiotics (griseofulvin, nystatin, amphotericin-B, Flucytosine) and other antibiotics-lincomycin, vancomycin, cephalosporins, colistin, novobiocin. etc.
- (c) Antitubercular, antiviral and antineoplastic drugs.
- (d) Nitrofurans: Nitrofurantoin, nitrofurazone, nitrofurazolidone, etc.
- (e) Antiprotozoan drugs: Drugs acting against coccidia, trypanosomes, babesia, theileria, anaplasma, amoeba and plasmodium.
- (f) Anthelmintics, Drugs acting against nematodes, cestodes and trematodes.
- (g) General Antiseptics and Disinfectants: Halogenated compounds, coal tar derivatives, dyes and sulphur compounds.

General Toxicology: Mechanism of detoxification of poisons, General principles of diagnosis and non-antidotal therapy of poisoning, Principles of antidotal therapy.

Toxicology of inorganic compounds: Arsenic, lead, selenium, molybdenum, fluorine, copper, mercury, nitrate and nitrite and oxalates.

Toxicology of Agro-chemicals: Insecticides (organophosphates), chlorinated hydrocarbons and carbamates), fungicides, herbicides and rodenticides.

Toxicology of Poisonous Plants: Cyanogenic plants, Plants producing photosensitization, teratogenic effect, anticoagulating action, thiamine deficiency. Mycotoxins (ergot alkaloids, aflatoxins and other mycotoxins). Some other important toxic plants and weeds (Milk weeds, tobacco, castor plant, oleander, nuxvomica, solanum, jimson weed, abrus precatorius etc.)

Toxicology of Industrial contamination, food additives, chemical warfare agents and radioactive substances.

Veterinary Physiology [Code: VPY]

Digestion-Control of motility and secretion of alimentary canal; gastric hormones and reflexes in the control of digestive functions; control of rumen motility; digestion in the ruminant and monogastric animals; absorption from rumen and the digestive tract; avian digestion, physiological basis of gastric disorders.

Blood and circulation -Blood coagulation; haemoglobin and its polymorphism, anaemias, reticuloendothelial system, body defence mechanism and immunogenesis, Electrophysiology of heart, electro-cardiography; principles and interpretation; haemodynamics and concerned biophysical principles; neural and humoral control of heart and blood vessels; cardiac output and vascular reflexes; autoregulation mechanisms in the heart, lungs, brain, muscle, kidneys and skin, blood-brain barrier, circulatory shock and hypertension.

Respiration-Mechanics of respiration; neural and chemical control of respiration, gaseous transport and exchange; hypoxia, anoxia, hypo-barrism and high altitude living; physiology of work and exercise.

Excretion-Modern concepts of urine formation; control of renal circulation; secretion and absorption in the renal tubules; regulation of acid-base balance by the lungs and the kidneys, hormonal and renal regulation of body fluid and electrolytes balance, renal function in desert animals; physiology of micturation; uraemia and other renal disorders.

Climatology-Physiology of climatic stress: effects of stress on production and reproduction; neural and hormonal regulation of body temperature in homeotherms, mechanism and adaptation; Photoperiodicity and biological rhythm.

Muscle contraction- Muscle types; their intracellular contractile mechanisms, electrophysiology of muscles; neuromuscular junction; excitation-contraction coupling, its biochemical and ionic mechanisms, Myopathies.

Nervous System-Neurons, neurotransmission and neurotransmitters, Electrophysiology of nerves; synapses, neuronal circuit receptors, reflexes; cerebral cortex, control of motor & sensory functions; Physiology of plain sensory pathway, Hypothalamus, control of endocrine and visceral functions, autonemic nervous system; basal ganglia structures; Limbic system animal instincts and neurophysiology of behaviour, control of food intake, Special senses.

Endocrinology-Hormones, hormone receptors, mechanism of hormones action at cellular and subcellular levels; Hypothalamic and feed-back control of hormone secretion. Releasing & inhibiting factors; Pineal gland and its hormones; Hormones of hypophyses and all other endocrine glands; non-conventional hormones; mechanisms of different hormone synthesis; endocrine disorders.

Reproductive Physiology-Hypothalamic and hypophysial control of testicular function, spermatogenesis and androgen secretion; inhibition; control of fertility by epididymis; control of male sexual behaviour, erection, ejaculation, semen production and accessory sex glands, male reproductive disorders.

Control of ovarian function, oestrus, ovulation; C.L. and its role in oestrus cycle and pregnancy; oestrogens, progesterone, relexin and prostaglandins, etc. effect on female genital tract; hormones on oestrus synchronisation and superovulation; female reproductive disorders.

Mechanism of sperm capacitation, sperm and ovum transport, the female genital tract; fertilization, implantion, maintenance of pregnancy and physiology of placenta; Zygote as an endocrine and immunogenic structure.

Physiology of parturition, adrenal corticoids, PGs and oxytocin.

Lactation-Hormonal control of mammary gland, growth before puberty, during pregnancy and after parturition; hormonal control of milk let-down; control of initiation, maintenance and cessation of lactation; hormone and nutrients in milk production; mammary involution, milk precursors and synthesis of milk con-stitutents.

Artificial Insemination-Collection, preservation, transport of semen, semen dilutors; artificial insemination.

Embryo Transfer-Collection, preservation, transport and transplantation of zygotes, oocyte culture and *in vitro* fertilization.

Veterinary Public Health [Code: VPH]

Zoonoses-Concept and classification of zoonoses, Ecological aspects of zoonoses, Role of diseased and reservoir wild animal hosts. Role of vector and natural habitats of the agents. Human diseases already spread by animals. Animals as agents and vectors of human diseases.

Studies on the epidemiology and control of zoonoses of public health importance caused by viral, rickettsial, bacterial, mycotic and zoo-parasitic agents.

Meat Hygiene-Elements of meat inspection. Slaughter house construction and management. Antemortem inspection, methods of slaughter, carcass dressing and postmortem examination. Handling, storage of fresh meat, Sanitation facilities in plant operations, Deteriorative changes in meat. Meat and Meat Products preparation, Food-borne illness due to meat and meat products, poultry and poultry products.

Milk Hygiene-Microbiological methods for hygienic qualities of milk and milk products (pasteurized, sterilized, flavoured milk, cream, butter, curd, cheese, cultured milk, milk powder, condensed and evaporated milk etc.) Cleanliness and sterility of dairy equipments. Adulteration in milk and milk products and its public health significance. Health hazards caused by diseased dairy animals. Milkborne infections and intoxications. Infant milk food and its relation to disease. Microbiological standards for milk and milk products.

Food Hygiene-Sampling, collection, shipment and preparation of analysis of foods. Microbial evaluation of hygienic quality of food, spoilage microbes in foods, foodborne illness, collection and analysis of foods and specimens. Microbiological evaluation of fruits and vegetables, drinks, juice and confectionery products in relation to their safety and quality of products. Microbiology of potable water and evaluation for use in food industry. Public health significance of viruses through food and its prevention and control.

Sea food Hygiene-Description of fish and shellfish and other sea foods in relation to food industry. Marine environmental factors affecting sanitary quality of seafoods diseases transmitted through fish and other seafoods. Marine biotoxins, ciguatera, tetrodotoxin, paralytic shellfish and scombroid poisoning.

Veterinary Surgery & Radiology [Code: VSR]

Current concepts in all species of domestic, livestock and poultry of inflammation, asepsis, antisepsis, in surgery and surgical bacteriology, sterilization, preoperative considerations, physiopathology of trauma, surgical stress and shock; blood and fluid therapy; post-operative care; phenomenon of wound healing; principles of tissue and organ transplantation.

Study of fracture dislocations, diseases of the bones, their symptoms, diagnosis and treatment, healing of fracture and factors influencing them, complication and their surgical treatments, repair of fractures of different bones of the body by internal and external fixation; various affections of the joints, their diagnosis and treatment.

Surgical management of affections of sinuses, nasal and buccal cavities, pharynx, larynx, trachea and oesophagus in domestic animals. Affections of eye lids, lacrimal apparatus, orbit and its contents, cornea, conjunctiva, iris and lens and ocular therapeutics.

Surgical interventions in various affections of thoracic cavity *viz.* lung, pleura, mediastinal lymph glands and oesophagus. Various approaches for manipulating thoracic organs in large and small animals.

Disease of vascular system *viz.* aneurysm, avascular, necrosis, heart block and coronary occlusion, pericarditis, endocarditis patent ductus arteriosus, persistent foramen ovale, mitral and tricuspid stenosis and insufficiency; persistent aortic arch, and open heart surgery.

Diagnosis and correction of various surgical affections of abdominal organs; traumatic reticulitis, abomasal displacement, impaction of omasum, intestinal obstruction, hernias and neoplasms; surgical treatment of cardiac and pyloric stenosis, gastric torsion, renal and urethral and rupture of urinary bladder in animals.

Relationship between conformation of the limbs, foot and its axis, lameness and allied surgical conditions of fore and hind limbs. Surgical anatomy of udder and teats of domestic animals in relation to different surgical affections.

Selection of various anesthetic and preanaesthetic agents; their effects on different systems of the body, administration of anesthesia in small and large animals; study of the various parameters used in the evaluation of patient during anaesthesia accidents, complication and their remedies; non barbiturate intravenous anesthetics; anaesthesia for special surgical procedures on gut, adrenals and heart, electronarcosis; and hypothermia.

Instrumentation, X-ray machine, formulation of radiographic technique chart; artifacts and their prevention; special diagnostic radiographic densities in relation to clinical diagnosis; deep X-ray unit, isotopic unit for radiation therapy, quality of radiation hazards on man, animals and plants and radiation protection; Cytological changes due to radiation (alpha- X-ray and gamma rays) *in vivo* cellular response following therapy, radiation as an immunosuppressive agent.

Veterinary Virology [Code: VVY]

History of Virology, classification and nomenclature of viruses, nature of viruses, morphology, size and shape, biophysical and biochemical characteristics of viruses, cultivation of viruses and their growth characteristics in cell culture, embryonated eggs and experimental animals.

Purification, concentration and preservation, replication of viruses, assay of viruses, interference, transformation, incomplete and latent viruses, viral immunity.

General principles of laboratory diagnosis of viral diseases, serological test, epidemiology, methods of spread of viral infections, etiology, transmission and pathogenesis; viral vaccines, chemotherapy, prevention and control of viral diseases, latest trends in rapid viral diagnosis, statistical methods of virology.

RNA and DNA viruses: RNA viruses-Reoviruses, Arboviruses, Rotaviruses, Coronaviruses, Togaviruses, (Alphavirus, Flavi, virus, Mucosal disease virus group), Paramyxoviruses, orthomyxoviruses, Rhabdoviruses, Retroviruses, Picornaviruses, Bunyaviruses, Arenaviruses.

DNA Viruses: Pox Viruses, Herpesviruses, Adenoviruses, Papovaviruses, Parvoviruses.

LIST OF FACULTY MEMBERS (PhD/MVSc)

Sl. No.	Name of Scientist	Qualification	Designation	Date of Induction
1. ANIMAL BIOCHEMISTRY				
1.	Joshi, P.	MSc, PhD	HD	22.08.1988
2.	Sharma, Bhaskar	MSc, PhD	National Prof.	22.08.1988
3.	Kataria, M. (Mrs.)	MSc, PhD	PS	22.08.1988
4.	Saini, Mohini (Mrs.)	MSc, PhD	PS	05.04.1997
5.	Bhure, Sanjeev Kumar	MVSc, PhD	PS	22.06.2009
6.	Kumar Praveen	MSc, PhD	PS	02.06.2010
7.	Mahawar Manish	MVSc, PhD	SS	07.10.2011
8.	Kumar, Ajay	MVSc, PhD	Scientist	16.07.2014
Member Located at other Division/Section/Station				
9.	Reddy, G.R. (Bengaluru)	MSc, PhD	PS	25.02.1994
10.	Umapathi V. (Bengaluru)	MVSc, PhD	SS	26.02.2013
2. ANIMAL BIOTECHNOLOGY				
1.	Kumar, Satish	MSc, PhD	HD	20.10.1990
2.	Goswami, P.P.	MSc, PhD	PS	20.10.1990
3.	Gupta, Praveen Kr.	MVSc, PhD	PS	29.12.1999
4.	(Mrs). Dey, Sohni	MVSc, PhD	SS	29.07.2006
5.	C. Madhan Mohan	MVSc, PhD	SS	29.07.2006
6.	Kumar G.VP.P.S	MVSc, PhD	SS	02.06.2010
7.	Dhara, Sujoy Kumar	MSc, PhD	SS	07.10.2011
8.	Shrivastava Sameer	MVSc, PhD	Scientist (SS)	07.10.2011
9.	Sonal	MVSc, PhD	Scientist (SS)	07.10.2011
10.	Kumar, Deepak	MVSc, PhD	Scientist	16.07.2014
Member Located at other Division/Section/Station				
11.	Tiwari, A.K. (B. Standardization)	MVSc, PhD	HD	18.12.1997
12.	Chaudhari, Pallab,(B&M Division)	MVSc, PhD	PS	17.05.2000
13.	Dechamma, H.J (Bengaluru)	MVSc, PhD	SS	12.09.2007
14.	Mishra, B.P.	MVSc, PhD	JD (Research)	07.10.2011
15.	Singh, Birbal (Palampur)	MSc, PhD	SS	07.10.2011
16.	Mishra, Bina (BP Div.)	MVSc, PhD	SS	07.10.2011
17.	Basagoudanayar, S.H. (Bengaluru)	MVSc, PhD	SS	07.10.2011
18.	Sonwane, Arvind A.(AG Div.)	MVSc, PhD	Scientist	26.02.2013
19.	Patel, Chhabi Lal (BP Div.)	MVSc, PhD	Scientist	26.02.2013
3. ANIMAL GENETICS & BREEDING				
1.	Sharma, Deepak	MVSc, PhD	HD	30.08.1995
2.	Bhushan Bharat	MSc, PhD	PS	28.06.1996
3.	Kumar Pushpendra	MSc, PhD	PS	28.06.1996
4.	Singh, Ran Vir	MSc (AGB), PhD (AGB)	PS	18.12.1997
5.	Mitra, Abhijeet	BVSc&AH, MSc (AGB) & PhD	National Fellow	07.11.2001
6.	Kumar Subodh	MSc, PhD	PS	15.01.2003
7.	Sahoo, Nihar Ranjan	MVSc, PhD	Scientist	26.02.2013
8.	Sivamani B.	MVSc, PhD	Scientist	26.02.2013
9.	Panigrahi, Manjit	MVSc, PhD	Scientist	16.07.2014

Member Located at other Division/Section/Station

10. Kumar Sanjeev (CARI)	MVSc, PhD	PS	26.07.1994
11. Gaur, G.K. (LPM)	PhD	PS	26.07.1994
12. Sharma, A.K. (Temp. H. Muk)	MVSc, PhD	SS	15.05.1999
13. Kumar Amit, (LAR)	MVSc, PhD	SS	10.01.2011

4. ANIMAL NUTRITION

1. Verma, A.K.	MSc (Ag), PhD	HD	30.08.1995
2. Garg, A.K.	MSc, PhD	PS	22.08.1988
3. Kamra, D.N.	MSc, PhD	National Prof.	20.10.1990
4. Chaudhury, L.C.	MSc (Ag), PhD	PS	30.08.1995
5. Singh, Putan	MSc, PhD	PS	30.08.1995
6. Dutta Narayan	MSc, PhD	PS	18.12.1997
7. Pattanaik, A.K.	MVSc, PhD	PS	29.12.1999
8. Chaturvedi, V.B.	MSc, PhD	PS	29.04.2001
9. Saha, S.K.	MSc (Dairy), PhD	PS	28.04.2003
10. Jadhav, Sunil Eknath	MVSc, PhD	SS	26.02.2013

Member Located at other Division/Section/Station

11. Bhar R. (Palampur)	MVSc, PhD	PS & I/C	15.05.1999
12. Das, Asit (Wild Life)	MSc, PhD	PS	27.12.2003
13. Sahoo, B. (Temp. A.H., Muk)	MVSc, PhD	SS	02.06.2010
14. Kannan A (Plampur)	MVSc, PhD	SS	10.04.2012

5. BIostatistics

1. Kumar, Sanjay	MSc, PhD (Agril. Eco.)	HD	02.02.2005
2. Verma Med Ram	MSc (Ag. Stat.), PhD	SS	02.06.2010

Member Located at other Division/Section/Station

3. Singh, Yashpal (Computer Centre)	MCA	S (SS)	10.06.2008
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6. LIVESTOCK ECONOMICS**Member Located at other Division/Section/Station**

1. Kumar, Sanjay (ARIS Cell)	MSc, PhD (Agril. Eco.)	HD	02.02.2005
2. Singh D.K.	M.Sc., Ph.D.	S(SS)	16.07.2014
3. Bardhan, D.	MVSc, PhD	SS	16.07.2014
4. Saran Sandeep (CARI)	M.Sc, PhD	PS	16.07.2014

7. EPIDEMIOLOGY

1. Singh, B.R.	MVSc, PhD	HD	07.10.2011
2. Sinha, D.K.	MVSc, PhD	PS	10.06.2002
3. Qureshi, Salauddin	MVSc, PhD	SS	26.02.2013

Member Located at other Division/Section/Station

4. Rana Rajneesh (B&M Division)	MVSc, PhD	PS	07.10.2011
5. O.R. Vinodhkumar	MVSc, PhD	Scientist	16.07.2014

8. LIVESTOCK PRODUCTION & MANAGEMENT

1. Dutt, Triveni	MSc, PhD	PS	08.01.1996
2. Tomar, A.K.S.	PhD (Ani.Breeding)	PS	07.11.2001
2. Singh, Mukesh	PhD (FM&P Engineering)	PS	02.02.2005
3. Patel, BHM	MVSc, PhD	SS	02.06.2010
4. Mehrotra Sanjeev	MVSc, PhD	PS	15.01.2003

Member Located at other Division/Section/Station

5. Mondal S. K. (Kolkata)	MSc, PhD	SS	29.07.2006
6. Naskar, Syamal (Kolkata)	MSc, PhD	SS	21.12.2009

9. LIVESTOCK PRODUCTS TECHNOLOGY				
1.	Mendiratta, S.K.	MVSc, PhD	HD	28.06.1996
2.	Chauhan, Geeta	MSc, PhD	SS	10.06.2008
3.	Kandeepan, G	MVSc, PhD	Scientist	07.10.2011
4.	Ranjan Kumar Rajeev	MVSc, PhD	Scientist (SS)	16.07.2014
5.	Das, A.K.	MVSc, PhD	Scientist (SS)	16.07.2014
10. POULTRY SCIENCE				
1.	Majumdar, Samir	MVSc, PhD	PS	20.10.1990
2.	Singh, D.P.	MVSc, PhD	PS	20.10.1990
3.	Jag Mohan	MSc, PhD	PS	20.10.1990
4.	Tyagi, Pravin, K.	MSc, PhD	PS	28.06.1996
5.	Tyagi Pramod Kumar	MSc, PhD	PS	28.06.1996
6.	Bandyopadhyay, U.K. (Kolkata)	MVSc, PhD	PS	18.02.1998
7.	Saxena, V.K.	MVSc, PhD	PS	30.06.1998
8.	Raj Narayan	MSc, PhD	PS	30.06.1998
9.	Singh, Jagbir	MSc, PhD	PS	29.12.1999
10.	Mandal, A.B.	MVSc, PhD	PS	17.05.2000
11.	Yadav, A.S.	MVSc, PhD	PS	18.12.2000
12.	Beura, C.K.	MVSc, PhD	PS	15.01.2003
13.	Sastry, K.V.H. (CARI, BBSR)	MVSc, PhD	SS	15.01.2003
14.	Deo Chandra	MSc, PhD	PS	27.12.2003
15.	Bhanja, S.K.	MVSc, PhD	PS	27.12.2003
16.	Bais, R.K.S. (CARI, BBSR)	MVSc & AH, PhD	PS	02.02.2005
17.	Mishra, Suryakant (CARI, BBSR)	MVSc, PhD	PS	27.09.2005
18.	Singh, Ram	MSc, PhD	SS	29.07.2006
19.	Tomar, Simmi	MVSc, PhD	SS	21.12.2009
20.	Sahoo, Santosh Kumar (CARI, BBSR)	MVSc, PhD	PS	07.10.2011
21.	Giri, Sunil Chandra (CARI, BBSR)	MVSc, PhD	SS	07.10.2011
22.	Biswas, Ashim Kumar	MVSc, PhD	SS	26.02.2013
23.	Biswas, Avishek	MVSc, PhD	SS	26.02.2013
24.	Divya	MVSc, PhD	SS	16.07.2014
11. VETERINARY BACTERIOLOGY				
1.	Rana, Rajneesh	MVSc, PhD	PS	22.06.2009
2.	Viswas, K.N.	MVSc, PhD	SS	07.10.2011
Member Located at other Division/Section/Station				
3.	Singh V.P.	MVSc, PhD	JD (Academic)	25.02.1994
4.	Das P (BP Div.)	MVSc, PhD	PS	30.08.1995
5.	Rawat, Mayank (Stand. Division)	MVSc, PhD	PS	28.06.1996
6.	Singh, B.R. (Epidemiology)	MVSc, PhD	HD	19.12.1998
7.	Chaturvedi, V.K. (BP Division)	MVSc, PhD	HD	17.05.2000
8.	Rathore, Rajesh (CADRAD)	MVSc, PhD	SS	27.09.2005
9.	Pati, U.S. (Palampur)	MVSc, PhD	SS	07.10.2011
10.	Dandapat, Premanshu (Kolkata)	MVSc, PhD	SS	10.04.2012
11.	Kumar, Bablu (BP Division)	MVSc, PhD	SS	26.02.2013
12.	Agrawal, Ravi Kant (LPT Division)	MVSc, PhD	SS	26.02.2013
12. VETERINARY EXTENSION EDUCATION				
1.	Chander Mahesh	MSc, PhD	HD	30.08.1995
2.	Tripathi, Hema (Mrs.)	MSc, PhD	PS	25.11.1994
3.	Tiwari, Rupasi (Mrs.)	MSc, PhD	SS	10.06.2002
4.	Singh, B.P.	MSc, PhD	SS	27.12.200

Member Located at other Division/Section/Station

5.	Sagar, M.P. (CARI)	MSc, PhD	PS	02.06.2010
6.	Lal Niranjana (CARI)	MSc (Agrl. Ext.), PhD	Scientist	10.01.2011

13. VETERINARY GYNAECOLOGY & OBSTETRICS

1.	Kumar Harendra	MVSc, PhD	HD	18.12.1997
2.	Srivastava, S.K.	MVSc, PhD	PS	28.06.1996
3.	Sardar Mehmood	MVSc, PhD	PS	05.04.1997
4.	Das G.K.,	MVSc, PhD	PS	29.07.2006
5.	Ghosh S.K.	MVSc, PhD	PS	29.07.2006
6.	Prasad J.K.	MVSc, PhD	SS	02.06.2010
7.	Singh, Sanjay Kumar	MVSc, PhD	SS	27.09.2005
8.	Narayanan, K	MVSc, PhD	SS	07.10.2011

Member Located at other Division/Section/Station

9.	Mehrotra, Sanjeev (LPM)	MVSc, PhD	PS	15.01.2003
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14. VETERINARY IMMUNOLOGY

1.	Goswami, T.K.	MVSc, PhD	PS & Incharge	15.05.1999
2.	Tomar Alka	MVSc, PhD	PS	28.11.1994
3.	Dandapat, S.	MVSc, PhD	SS	18.12.2000
4.	Saravanan R	MVSc, PhD	Scientist (SS)	07.10.2011
5.	Singh M.K.	MVSc, PhD	SS	26.02.2013

Member Located at other Division/Section/Station

6.	Kishore Subodh (Bengaluru)	MVSc, PhD	PS	19.06.1992
7.	Ganesh, K. (Bengaluru)	MVSc, PhD	SS	28.06.1996
8.	Dhama, K. (Pathology Division)	MVSc, PhD	PS	15.01.200

15. VETERINARY MEDICINE

1.	Dimri, Umesh	MVSc, PhD	HD	17.05.2000
2.	Dey, S.	MVSc, PhD	PS	28.06.1996
3.	Mukherjee, Reena	MVSc & AH, PhD	PS	30.06.1998
4.	Mondal, D.B.	MVSc, PhD	PS	15.01.2003
5.	Gupta Vinod Kumar	MVSc, PhD	SS	02.06.2010
6.	De, U.K.	MVSc, PhD	Scientist (SS)	16.07.2014

Member Located at other Division/Section/Station

7.	Mondal, Dayamoy, CARI (BBSR)	MVSc, PhD	SS	10.04.2012
8.	Bandyopadhyay Samiran (Kolkata)	MVSc, PhD	Scientist (SS)	10.04.2012

16. VETERINARY PARASITOLOGY

1.	P.S. Banerjee	MVSc & AH, PhD	HD	29.07.2006
2.	Prasad, A.	MSc, DPhil	PS	22.08.1988
3.	Ghosh, S.	MSc, PhD	PS	30.08.1995
4.	Tiwari, A.K.	MSc, PhD	PS	30.06.1998
5.	Raina, O.K.	MPhil, PhD	PS	29.12.1999
6.	Samanta, S.	MVSc, PhD	SS	29.12.1999
7.	Saravanan, B.C.	MVSc, PhD	S	22.06.2009
8.	Garg, Rajat	MVSc, PhD	SS	02.06.2010
9.	Ram, Hira	MVSc, PhD	SS	10.01.201

Member Located at other Division/Section/Station

10.	Chandra Dinesh (CADRAD)	MVSc, PhD	PS	29.12.1999
11.	Bhattacharya, D. (Kolkata)	MVSc, PhD	SS	27.12.2003
12.	Bandyopadhyay, S. (Kolkata)	MVSc, PhD	SS	22.06.2009
13.	Sankar, M (Mukteswar)	MVSc, PhD	Scientist	10.01.2011

17. VETERINARY PATHOLOGY				
1.	Singh, Rajendra	MVSc, PhD	HD	05.04.1997
2.	Somvanshi, R.	MVSc, FRVC, PhD	PS	24.04.1991
3.	Singh, S.D.	MVSc, PhD	PS	24.04.1991
4.	Sharma, A.K.	MVSc, PhD	PS	30.03.1993
5.	Saikumar, G.	MVSc, PhD	PS	30.06.1998
6.	Rai R.B.	MVSc, PhD,	PS	09.04.200
Member Located at other Division/Section/Station				
7.	Singh, K.P. (CADRAD)	MVSc, PhD	PS	25.02.1994
8.	Sharma, Rinku (Palampur)	MVSc, PhD	Scientist	07.10.2011
18. VETERINARY PHARMACOLOGY				
1.	Kumar Dinesh	MVSc, PhD	HD	18.12.1997
2.	Sarkar, S.N.	MVSc, PhD	PS	25.02.1994
3.	Singh, Thakur Uttam	MVSc, PhD	Scientist	07.10.2011
4.	Rahal Anu	MVSc, PhD	SS	16.07.2014
Member Located at other Division/Section/Station				
5.	Telang, A.G. (CADRAD)	MVSc, PhD	SS	17.05.2000
19. VETERINARY PHYSIOLOGY				
1.	Sharma, G. Taru	MSc, PhD	HD	28.06.1996
2.	Bag, Sadhan	MSc, PhD	PS	07.11.2001
3.	Singh, Gyanendra	MVSc, PhD	SS	15.01.2003
4.	Sarkar, Mihir	MSc, PhD	PS	22.06.2009
5.	Kumar Puneet	MSc, PhD	PS	02.06.2010
6.	Maurya V.P.	MSc (Dairying), PhD	PS	07.10.2011
7.	Chandra, Vikash	MVSc, PhD	Scientist (SS)	07.10.2011
Member Located at other Division/Section/Station				
8.	Das, B.C. (Kolkata)	MSc PhD	SS	29.07.2006
20. VETERINARY PUBLIC HEALTH				
1.	Kumar, Ashok	MVSc, PhD	HD	15.05.1999
2.	Agarwal R.K.	MVSc, PhD	PS	20.10.1990
3.	Malik, S.V.S.	MVPH, PhD	PS	29.08.1992
4.	Singh, D.K.	MVSc, PhD	PS	25.02.1994
5.	Bhilegaonkar, K.N.	MVSc, PhD	PS	15.05.1999
6.	Rawool, Deepak, B.	MVSc, PhD	SS	07.10.2011
7.	Zubal, Z.B.	MVSc, PhD	SS	16.07.2014
Member Located at other Division/Section/Station				
8.	Das, S.C. (Kolkata)	MVSc, PhD	PS	29.12.1999
21. VETERINARY SURGERY				
1.	Amarpal	MVSc, PhD	HD	30.08.1995
2.	Sharma, A.K.	MVSc, PhD	PS	20.10.1990
3.	Maiti, S.K.	MVSc, PhD	PS	28.06.1996
4.	Hoque, M.	MVSc, PhD	PS	05.04.1997
5.	Kinjavdekar, P.	MVSc, PhD	PS	30.06.1998
6.	Kumar, Naveen	MVSc, PhD	PS	30.06.1998
7.	Pawde, A.M.	MVSc, PhD	PS	30.06.1998
8.	Aithal, H.P.	MVSc, PhD	PS	29.12.1999
9.	Pathak, Rekha	MVSc, PhD	SS	10.01.2011
10.	Singh, Kiranjeet	MVSc, PhD	SS	26.02.2013
11.	Gopinathan Aswathy	MVSc, PhD	Scientist	16.07.2014

22. VETERINARY VIROLOGY

1. Pandey, A.B.	MVSc, PhD	HD	15.05.1999
2. Muthuchelvan, D	MVSc, PhD	SS	07.10.2011
3. Ramakrishnan, M.A.	MVSc, PhD	SS	07.10.2011
4. Rajak, K.K.	MVSc, PhD	Scientist (SS)	07.10.2011
5. Biswas, Sanchay Kumar	MVSc	Scientist (SS)	16.07.2014
6. Gnanavel, V.	MVSc	Scientist (SS)	16.07.2014

Member Located at other Division/Section/Station

7. Kataria, J.M. (CARI)	MVSc, PhD	Director	22.08.1988
8. Venkantaraman, R. (Bengaluru)	MVSc, PhD	JD	24.04.1991
9. Nandi, S. (CADRAD)	MVSc, PhD	PS	28.06.1996
10. Sanyal Ankit	MVSc, PhD	PS	15.05.1999
11. Dhar, Pranab (Stand. Div.)	MVSc, PhD	PS	17.05.2000
12. Sreenivasa, B.P. (Bengaluru)	MVSc, PhD	SS	17.05.2000
13. Singh, R.P. (BP Div)	MVSc, PhD	PS	15.01.2003
14. Mondal, B. (Kolkata)	MVSc, PhD	PS	15.01.2003
15. Bhanuprakash, V. (Bengaluru)	MVSc, PhD	PS	27.09.2005
16. Hosamani, Madhusudan (Bengaluru)	MVSc, PhD	PS	27.09.2005
17. Saravanan, P. (Bengaluru)	MSc (Dairying), PhD	SS	27.09.2005
18. Malik, Y.P. (Stand. Div.)	MVSc, PhD	National Fellow	22.06.2009

FORM OF SURETY BOND TO BE EXECUTED BY A CANDIDATE WHO IS PURSUING PhD AS INSTITUTE SCHOLAR IN IVRI DEEMED UNIVERSITY THROUGH AN ENTRANCE EXAMINATION CONDUCTED BY INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

KNOW ALL MEN BY THESE PRESENT THAT I
Son/Daughter of resident of
.....
District of at present pursuing PhD in Indian Veterinary Research Institute deemed to be university under ICAR as Institute Scholar (hereinafter called the obligor) and Shri/Smt./Kum. Son/daughter of
..... resident of
..... (full address). (hereinafter called surety) do hereby jointly and severally bind ourselves and our-respective heirs, executors and administrators to pay to the Indian Council of Agricultural Research, a Society registered under the Societies Registration Act-1860 Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi- 110 001 (hereinafter called The ICAR”) on demand the sum of **Rs. 50,000/- (Rupees Fifty Thousands only)** together with interest thereon from the date of demand of Government rates for the time being in force on Government loans (if payments is made in a country other than India, equivalent of the said amount in the currency of that country converted at the official rate of exchange between that country and India) and together with all costs between attorney and client and all charges and expenses that shall or may have been incurred by the IVRI, Izatnagar.

WHEREAS the obligor has been pursuing PhD Institute Scholarship of the Indian Veterinary Research Institute as a result of the entrance examination held in the year 2013.

AND WHEREAS for the better protection of the I.V.R.I. the obligor has agreed to execute this bond with such condition as here under is written.

AND WHEREAS the said surety has agreed to execute this bond as Surety on behalf of the above bounden _____.

NOW THE CONDITION OF THE ABOVE WRITTEN OBLIGATION IS THAT in the event of the named obligor, Shri/Smt./Kum. leaving the studies after taking admission as PhD on the basis of the entrance examination without completion of PhD of 3 Years or on his/her being rusticated I removed from the Deemed University, the obligor and/or the Surety shall forthwith pay either jointly or severally to the IVRI as may be directed by the IVRI on demand the sum of Rs. 50,000/- (Rupees Fifty Thousands) only together with interest thereon from the date of demand at Government rates for the time being in force on Government loans.

AND upon the obligor Shri/Smt./Kum. and/or Shri/ Smt./Kum the surety aforesaid, making such payment the above written obligation shall be void and if no effect otherwise, it shall remain in full force and virtue.

PROVIDED ALWAYS that the liability of the surety hereunder shall not be impaired or discharged by reasons of time being granted or by any forbearance, act or omission of the IVRI or any person authorized by them (whether with or without the consent or knowledge

of the surety) nor shall it be necessary for the IVRI to sue the obligor first before suing the surety Shri/Smt./Kum. for amounts due hereunder:

The bond shall in all respect be governed by the laws of India for the time being in force and the rights and liabilities hereunder shall, where necessary, be accordingly determined by the appropriate courts in India.

Signed and dated this..... day of two thousand signed and delivered by the obligor above named Shri/Smt./Kum, in the presence of

Witnesses:

(Signature, Name and Address)

1.

**Signature of student
Obligor**

2. Signed and delivered by the surety above named (surety) Shri/Smt./Kum in the presence of

Witnesses:

(Signature, Name and Address)

(Signature of Surety)

1.

2.

CASTE CERTIFICATE FOR SCHEDULED CASTE/TRIBE CANDIDATE

1. This is to certify that Shri/Smt/Kumari
Date of Birth Son/Daughter of of village/
town in District/Division of State/Union
Territory..... belongs to the Caste/Tribe
which is recognized as SC/ST under the constitution (Scheduled Caste) Order, 1950. The
Constitution (Scheduled Caste) Union Territories Order, 1951. The Constitution (Scheduled Tribe)
Union Territories Order, 1951, as amended by the SCs And STs List (Modification) Order, 1950;
The Bombay Reorganization Act, 1960; The Punjab Reorganization Act, 1966; The State of HP Act,
1970; The North Eastern Areas(Reorganization) Act, 1971 and the SCs And STs Order
(Amendment) Act, 1976. The Constitution (Jammu & Kashmir) SC Order, 1956. The Constitution
(Andaman & Nicobar Islands) SC Order, 1959 as amended by SCs And STs Order, 1962. The
Constitution (Dadra & Nagar Haveli) STs Order, 1962. The Constitution (Pondicherry) SC Order,
1964. The Constitution Scheduled Tribe (Uttar Pradesh) Order, 1967. The Constitution (Goa,
Daman & Diu) SC Order, 1968. The Constitution (Nagaland) STs Order, 1970. The Constitution
(Sikkim) SC Order, 1968.
2. Shri/Smt./Kumari and/or his/her family ordinarily
resides in Village/town of District of
State /Union Territory of
- 3 Applicable in the case of SC/ST persons who have migrated from State /Union Territory
Administration to another State /Union Territory. The certificate is issued on the basis of the
SC/ST Certificate to Shri/Smt. Father/mother of Shri/Smt/
Kumari of village/town in
District/Division of State/Union Territory who
belongs to the Scheduled Caste/Tribe in the State/ Union
Territory issued by the (Name of the prescribed authority) vide their no.
..... Dated

Signature
Designation with seal of Office)

Place..... (State /Union Territory)

Date.....

*Please delete the words which are not applicable. Please quote specific presidential order.

NOTE: The term ordinarily reside(s) used here has the same meaning as in section 20 of the
representation of the people's act, 1950.

List of Authorities Empowered to issue SC/ST Certificates

1. District Magistrate /Additional District Magistrate/ Deputy Commissioner/ Additional Deputy
Commissioner/ Deputy Collector/1st Class Stipendiary Magistrate/ City Magistrate/Sub-divisional
Magistrate/Taluka Magistrate/ Executive Magistrate/ Extra Assistant Commissioner not below the
rank of 1st class stipendiary Magistrate.
2. Chief Presidency Magistrate/Additional Chief Presidency Magistrate/ Presidency Magistrate
3. Revenue Officers, not below the rank of Tehsildar
4. Sub-divisional Officer of the area where the candidate and /or his family normally resides
5. Administrator/Secretary to the Administrator/Development Officer (Lakshadweep Islands)

FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD (OBC) APPLYING FOR ADMISSION TO CENTRAL EDUCATIONAL INSTITUTIONS (CEIs), UNDER THE GOVERNMENT OF INDIA

This is to certify that Shri/Smt./Kumari
Date of Birth Son/Daughter of of village/town in
..... District/Division of State/Union Territory belongs to the
..... community which is recognized as a backward class under:

- i) Resolution No. 12011/68/93-BCC (C) dated 10/09/1993 published in the Gazetted of India Extraordinary Part I Section I No. 186 dated 13/09/1993.
- ii) Resolution No. 12011/9/94-BCC dated 19/10/1994 published in the Gazetted of India Extraordinary Part I Section I No. 163 dated 20/10/1994.
- iii) Resolution No. 12011/7/95-BCC dated 24/05/95 published in the Gazetted of India Extraordinary Part I Section I No. 88 dated 25/05/95.
- iv) Resolution No. 12011/96/94-BCC dated 09/03/96.
- v) Resolution No. 12011/44/96-BCC dated 06/12/96 published in the Gazetted of India Extraordinary Part I Section I No. 210 dated 11/12/96.
- vi) Resolution No. 12011/13/97-BCC dated 03/12/97.
- vii) Resolution No. 12011/99/94-BCC dated 11/12/97.
- viii) Resolution No. 12011/68/98-BCC dated 27/10/99.
- ix) Resolution No. 12011/88/98-BCC dated 06/12/99 published in the Gazetted of India Extraordinary Part I Section I No. 270 dated 06/12/99.
- x) Resolution No. 12011/36/99-BCC dated 04/04/2000 published in the Gazetted of India Extraordinary Part I Section I No. 71 dated 04/04/2000.
- xi) Resolution No. 12011/44/99-BCC dated 21/09/2000 published in the Gazetted of India Extraordinary Part I Section I No. 210 dated 21/09/2000.
- xii) Resolution No. 12015/9/2000-BCC dated 06/09/2001.
- xiii) Resolution No. 12011/01/2001-BCC dated 19/06/2003.
- xiv) Resolution No. 12011/04/2002-BCC dated 13/01/2004.
- xv) Resolution No. 12011/9/2004-BCC dated 16/01/2006 published in the Gazetted of India Extraordinary Part I Section I No. 210 dated 16/01/2006.
- xvi) Resolution No. 12011/14/2004-BCC dated 12/03/2007 published in the Gazetted of India Extraordinary Part I Section 0-I No. 270 dated 12/01/2007.

Shri/Smt./Kumari and/or his family ordinarily reside(s) in the
..... District/Division of State. This is also to certify
that he/she does not belongs to the persons/sections (creamy Layer) mentioned in Column 3 of the Schedule
to the Government of India, Department of Personnel & Training O.M. No. 36012/22/93-Estt.(SCT) Dated
08/09/93 which is modified vide OM No. 36033/3/2004 Estt. (Res.) dated 09/03/2004.

Dated.....

DISTRICT MAGISTRATE/
DEPUTY COMMISSIONER, ETC.
SEAL

NOTE:

- (a) The term ordinarily reside(s) used here has the same meaning as in section 20 of the representation of the people's act, 1950
- (b) The authorities competent to issue Caste Certificate are indicated below:
 - i. District Magistrate /Additional District Magistrate/ Collector/Deputy Commissioner/ Additional Deputy Commissioner/ Deputy Collector/1srt Class Stipendiary Magistrate/City Magistrate/Sub-divisional Magistrate/Taluka Magistrate/ Executive Magistrate/Extra Assistant Commissioner not below the rank of 1st class stipendiary Magistrate.
 - ii. Chief Presidency Magistrate/Additional Chief Presidency Magistrate/ Presidency Magistrate
 - iii. Revenue Officers, not below the rank of Tehsildar
 - iv. Sub-divisional Officer of the area where the candidate and /or his family normally resides

DECLARATION/UNDERTAKING- FOR OBC CANDIDATES ONLY

I, Son/Daughter of Shri resident of Village/Town/City District State hereby declare that I belong to the Community which is recognized as a backward class by the Government of India for the purpose of reservation in services as per orders contained in Department of Personnel and Training Office Memorandum No. 36012/22/93-Estt.(SCT), dated 8/9/1993. It is also declared that I do not belongs to persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the above referred Office Memorandum dated 8/9/93, is modified vide Department of Personnel & Training OM No. 36033/3/2004 Estt. (Res.) dated 09/03/2004.

Signature of the Candidate

Place:

Date:

- Declaration/undertaking not signed by candidate will be rejected.
- False declaration will render the applicant liable for termination of registration at any time.

Creamy Layer Definition

OBC Creamy layer is defined comprehensively at <http://ncbc.nic.in/html/creamylyer.html>

All candidates for the OBC reserved seats should make sure that they do not satisfy any of the creamy layer criteria as listed in the website. Some general exclusion for quick reference (no way comprehensive) are as follows:

1. Any of the parents holds a constitutional position in Govt. of India.
2. Any of the parents is a class I officer.
3. Both the parents are class II officers.
4. Any one of the parents is employed in an equivalent to class I officer or both parents equivalent to class II officer in public sector, insurance companies, banks, universities or in other Organizations
5. Land holdings on irrigated is 85% or more of the statutory ceiling area.
6. Parents' income is more than Rs. 4.5 lakhs per year or Government of India directives applicable at the time of counselling.

AFFIDAVIT BY THE STUDENTS

I, Son/D/o Mr./ Mrs.
....., having being admitted to
..... (Name of the Institute), have received a
copy of UGC regulations on curbing the menace of ragging in higher educational Institution
2009, (hereinafter called "Regulations") carefully read and fully understood the provisions
contained in the said regulations

2. I have, in particular, perused clause 3 of the Regulations and am aware as to what constitutes ragging.
3. I have also, in particular, perused clause 7 and clause 9.1 of the Regulations and am fully aware of the penal and administrative action that is liable to be taken against me in case I am found guilty of or abetting ragging, actively or passively, or being part of a conspiracy to promote ragging.
4. I hereby solemnly aver and undertake that
 - a) I will not indulge in any behaviour or act that may be constituted as ragging under clause 3 of the Regulations.
 - b) I will not participate in or abet or propagate through any act of commission or omission that may be constituted as ragging under clause 3 of the Regulations.
5. I hereby affirm that, if found guilty or ragging, I am liable for punishment according to clause 9.1 of the Regulations, without prejudice to any other criminal action that may be taken against me under any penal law or any law for the time being in force.
6. I hereby declare that I have not been expelled or debarred from admission in any institution in the country on account of being found guilty of, abetting or being part of a conspiracy to promote, ragging; and further affirm that, in case the declaration is found to be untrue, I am aware that my admission is liable to be cancelled.

Declared this _____ day of _____ month of _____ year,

Signature of deponent

Name:

VERIFICATION

Verified that the contents of this affidavit are true to the best of my knowledge and not part of the affidavit is false and nothing has been concealed or misstated therein.

Verified at _____ on this day of _____ month of _____ year,

Signature of deponent

AFFIDAVIT BY THE PARENTS

Mr./Mrs. Father of/ Mother of
..... (Full Name of student with admission
registration No.), having being admitted to
(Name of the Institute), have received a copy of UGC regulations on curbing the menace of
ragging in higher educational Institution 2009, (hereinafter called "Regulations") carefully
read and fully understood the provisions contained in the said regulations.

- 2. I have, in particular, pursued clause 3 of the Regulations and am aware as to what constitutes ragging.
- 3. I have also, in particular, perused clause 7 and clause 9.1 of the Regulations and am fully aware of the penal and administrative action that is liable to be taken against me in case He/She is found guilty of or abetting ragging, actively or passively, or being part of a conspiracy to promote ragging.
- 4. I hereby solemnly aver and undertake that
 - a) My ward will not indulge in any behaviour or act that may be constituted as ragging under clause 3 of the Regulations.
 - b) My ward will not participate in or abet or propagate through any act of commission or omission that may be constituted as ragging under clause 3 of the Regulations.
- 5. I hereby affirm that, if found guilty or ragging, I am liable for punishment according to clause 9.1 of the Regulations, without prejudice to any other criminal action that may be taken against my ward under any penal law or any law for the time being in force.
- 6. I hereby declare that my ward has not been expelled or debarred from admission in any institution in the country on account of being found guilty of, abetting or being part of a conspiracy to promote, ragging; and further affirm that, in case the declaration is found to be untrue, I am aware that the admission of my ward is liable to be cancelled.

Declared this _____ day of _____ month of _____ year,

Signature of deponent

Name:

Address & Tel./Mobile No.

VERIFICATION

Verified that the contents of this affidavit are true to the best of my knowledge and not part of the affidavit is false and nothing has been concealed or misstated therein.

Verified at _____ on this day of _____ month of _____ year,

Signature of deponent



ROLL NO.....

(TO BE FILLED IN BLOCK LETTERS)

PARTICULARS FOR REGISTRATION TO M.V.Sc./PhD DEGREE PROGRAMMES

1. Name of Student(as per matriculation) :		Affix your recent passport size photo
2. Name of PG programme joined at IVRI :	_____	
3. Discipline :	_____	
4. Date of admission :	_____	
5. Father's / Husband's name :	_____	
6. Mother's name :	_____	
7. Permanent Home address :	_____	
8. Mailing address :	_____	
9. Contact no. :	_____	Tel: Mobile: Email: Fax:
10. Whether Urban / Rural / UPS :	_____	
11. Gender :	_____	Male/Female

12. Marital Status : Married/Unmarried
13. Date & Place of birth :
14. State of Domicile & Nationality :
15. Religion :
16. Category : SC/ST/OBC/UR/PH
17. Whether sponsored, if so, name of the sponsoring authority :
18. Whether In-service, if so, mention the kind of leave granted by the Deptt. :
19. Language Known-Speak/Read and Write. Please indicate upto which level you have studied Hindi. :
20. Details of the examination passed :
(Please also enclose attested copies)

Sl. No.	Name of the Examination	Name of Univ. / College	Year of passing	Max. Marks/ OGPA	Marks/ OGPA obtained	Division
1.	High School / SSLC (10 th)					
2.	Intermediate / Higher Secondary (10+2)					
3.	Graduate					

20. Please also indicate the standard :
upto which you have studied
Hindi language
21. Whether JRF/ Institute : _____
Fellowship/ Others
22. Whether applied for any : _____
job/fellowship/admission before
registration at this Institute, if so,
give details (name of the
fellowship, if any awarded)
23. Details of fees deposited Amount : _____
Receipt No. & Date : Rs.....
.....

I, _____ hereby declare that information furnished by me is correct and no relevant information has been suppressed. I also declare that if any information or document furnished by me in this application is found to be wrong, I shall have no objection to my selection/admission being cancelled. I also undertake to abide by all the rules and regulations of the IVRI Deemed University.

Signature of the candidate

INDIAN VETERINARY RESEARCH INSTITUTE
IZATNAGAR (U.P.)

Date:

To

Dr./Shri/Miss/Mrs.....

Ph.D./M.V.Sc. Student

In order to constitute your Thesis research work and Advisory Committee for your Ph.D./M.V.Sc. Programme, it is necessary that you are assigned to a Faculty Member who will act as the Guide/Chairman of your Advisory Committee.

To facilitate your work under the guidance of a Faculty Member, who could guide you in the areas/problems on which you would work for P.G. Programme are to be given at the time of guide allotment as per allotment rules. For this you have to give your consent in the prescribed format as given below to work in any of the Campus/Centres or other ICAR Research Institutes.

.....

(Tear off here and return)

UNDERTAKING BY THE STUDENT

I, _____ hereby give my consent to work under the guidance of a Faculty Member in any of the Campus/Centres or other ICAR Research Institutes, who could guide me in the areas/problems on which I would work for P.G. Programme as per allotment rules. I also undertake to abide by all the rules and regulations of the IVRI Deemed University and in any case, shall have no objection to my selection/admission being cancelled.

Signature of student:

Dated:

